DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation.

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Long Distance Telephone: Harrison 951.

Eastern Office, 200 Fifth Ave., New York City. Tel. Gramercy 4897.
F. S. KENFIELD, Pres. F. P. KEENEY, Treas. and Manager.
E. DE FOREST WINSLOW, Vice-pres. O. T. CARSON, Secretary.

EDITORIAL STAFF.

W. E. MARQUAM, Managing Editor. JOSEPH GRAHAM, Technical Editor.
R. HERLOV, C. L. DAVIS, Associate Editors.

ADVERTISING REPRESENTATIVES.

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WHO WILL SUCCEED YOU IN BUSINESS?

THERE are a lot of young men in the plumbing and heating trades who no doubt have given this question little thought. And there are a lot of older men who, through foresight while they were younger, have provided for a continuance of their business when the time for a letup had come in their lives.

The question might be put in a little different way. Is your boy to succeed you in business? And is he to be your right-hand man as your business grows and prospers, before you lay down the reins that a less strenuous existence is to be yours?

Have you gone home at night after the trials of the day, and when mother and the boys asked how business had been, you replied: "Rotten. I wish I was out of it."

Or did you discuss some of the pleasant things, explain some of the new goods about which you had learned during the day, and plan ways in which the business could be increased?

Did you think what impression the conversation would make on your boys? Perhaps you have but one, or perhaps there are three or four, of an age that spells all ears and curiosity.

The growing boy looks to his father as his ideal. He is constantly studying his father—if his father does not discourage him. He's usually so interested in his father's affairs that a little paternal instruction will often produce much fruit.

But how many sons of master plumbers and fitters are to become masters themselves?

Some men will say, "Yes, it's all right to talk about the boys going into our business. But there's no money in it these days. I want my boys to get into something where they can get ahead in the world."

The youth of today are to be the business men of tomorrow. Why not then, inspire in them a respect and admiration for the business of their fathers?

Condemnation of the business in which any man is engaged shows narrow-mindedness. **The business is the reflected image of the character of the men engaged in it.**

This brings us to the question, "What is to be done to interest the young men in the plumbing and heating trades?"

Trade schools no doubt are a help, but it should not be necessary for the boy to remain away from home to get a knowledge of the business of which his father is the better teacher.

One father of the writer's acquaintance has five daughters and one son. The girls naturally, would not be expected to take up their father's work. But the boy, instead of securing the encouragement to continue in his father's business, is knocking around the country in an endeavor to get a start in the world for himself.

The other day we learned of one boy who was working for his father's competitor. He was a bright boy, anxious to advance in the business, and should logically have been with his father.

When asked why he had left his father's business, he replied: "Father don't seem to understand boys. He is so busy all the time that he don't take an interest in giving me the instruction I should have. I ought to be with him, for he knows his business. Yet I can learn more and do better for myself somewhere else."

Is this boy typical of any you know?

Years ago it wasn't the style to take any of the family to the state and national conventions. Even today in many of the states none but members are encouraged to attend.

But in other states and at the national convention today the attendance of the wives and daughters of the delegates is encouraged, and the occasion is indeed graced by their presence.

But how about the boys?

Why not inaugurate a "Junior Day" at the next state convention of your association? Have your boy with you—encourage your competitor's boy to attend.

Set aside one afternoon or an evening for educational talks and an open meeting for the boys. Have some whole-souled speakers who know boys to address them. Arrange for discussions on the various phases of the business—cost accounting, window displays, keeping stock, advertising—the different angles that will often interest the youthful mind more readily than that of older men.

The local association can arrange to have the boys visit various points of interest in the convention city, such as plants manufacturing plumbing and heating goods, the art galleries, libraries, technical schools and other places of educational value.

The lighter hours of the young men can readily be arranged—and if there are ladies in attendance the difficulties will not be great.

What do you think of such a plan? If you haven't a boy of your own, your partner's boy, or the son of your foreman, will enjoy the trip. **You** will be benefited more than anyone else.

Remember that what the boy is to become rests largely with his training. And if you give no thought to it, who will?

Write us today what you think of the plan. If you have some suggestions, make them known, that the subject may be fully discussed.

ILLINOIS MASTER PLUMBERS INTERESTED IN SMALL TOWN ORDINANCES.

The city of Morrison, Ill., recently passed a plumbing ordinance for the purpose of protecting the owners as well as the master plumbers in that city. The ordinance appealed to the officers of the Illinois Master Plumbers' Association, who were so interested that they had extra copies of it printed and mailed to the members in the state. The letter which accompanied the ordinance is in part as follows:

"We are mailing you under separate cover an ordinance recently passed by the city of Morrison, Ill., a city of about 2,500 inhabitants. Their city attorney claims that under Section V of the Illinois state plumbing law, every city, town or village having a system of water works or sewerage, should have an ordinance and inspection.

"We are sending you this ordinance, thinking it might be of some help to you in convincing your city officials that the property owners of your city are entitled to a similar ordinance in order to insure them against unsanitary plumbing."

We reprint the ordinance in this issue on pages 203, 204 and 205. It is well worth the careful perusal of master plumbers everywhere as well as plumbing inspectors and others who might be interested in getting an ordinance adopted in their city.

If there is no ordinance of this kind in your city, why not take the matter up through your council and show the members what master plumbers in cities as small as 2,500 population are doing toward improving the sanitary conditions where they are many times most needed?

LINCOLN'S FAMOUS GETTYSBURG SPEECH.

Next Wednesday, November 19th, will mark the fiftieth anniversary of the dedication of the national cemetery at Gettysburg, Pa., on which occasion Abraham Lincoln delivered his most famous address. In compliance with a request of Governor Dunne of Illinois that all papers in this state reprint this address at this time we take pleasure in reproducing it herewith:

Fourscore and seven years ago, our fathers brought forth upon this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation—or any nation so conceived and so dedicated—can long endure.

We are met on a great battle-field of that war. We are met to dedicate a portion of it as the final resting-place of those who have given their lives that that nation might live. It is altogether fitting and proper that we should do this.

But, in a larger sense, we cannot dedicate, we cannot consecrate, we cannot hallow, this ground. The brave men, living and dead, who struggled here, have consecrated it far above our power to add or to detract. The world will very little note nor long remember what we say here; but it can never forget what they did here.

It is for us, the living, rather, to be dedicated, here, to the unfinished work that they have thus far so nobly carried on. It is rather for us to be here dedicated to the great task remaining before us; that from these honored dead we take increased devotion to that cause for which they here gave the last full measure of devotion; that we here highly resolve that these dead shall not have died in vain; that the nation shall, under God, have a new birth of freedom, and that government of the people, by the people, for the people, shall not perish from the earth.

Abraham Lincoln.

Heating a New England House With Steam

First Article—Some of the Reasons for the Use of Certain Principles, Their Value in an Actual Installation, Told in Simple Language

By EDMUND RICHMOND PIERCE

THIS article and the one to follow will deal with the method of putting in a two-pipe, wet return, steam job. It is not chosen because it is thought the best type of job for the small fitter who has only a limited stock of tools, especially pipe threading tools, nor because in this type of job a minimum of large pipe can be used, but because it is the oldest type of successful piping for steam heating and as we shall finally discover is the true key to all systems of both steam and water heating.

The house is of the type quite common all over the United States, a large two-story house with a long ell. There are bay windows, with no cellar beneath them, to look after. Rooms with long cold halls on one side of them. Rooms that have great fire-places in them that will take away quantities of heat. Nearly all the problems that come to the ordinary fitter who does house heating mostly, and who has in many cases to prepare his own plans for the job, is to be found in this building, and for that reason it is selected as a sample upon which to develop the how and why in regard to numerous ways of doing a successful heating job, to the end that the reasons that should govern in each type can be clearly shown and applied to the same building.

We have had quantities of heating jobs illustrated for us showing the manner of piping and the quantity of heating surface to be used, and most excellent have been most of them but, as they rarely agree with each other, and still more rarely explain to the reader why they take a certain size of pipe in a given position, or use varying radiating surface in two rooms of equal size and perhaps on the same side of the building, the fitter who is trying to pick up from his trade magazine something that will put him right on this heating business, often gets considerably puzzled over the matter.

Perhaps he has more than one trade paper each month and finds from the different plans published in them, several, that seem to cover about the same conditions, but that they do not all agree as to the layout; study as he may, he will only seldom find the key to why the plant was put in as shown.

For myself, I always prefer the plan that tells me why the different things were done. Then I can determine whether the plan would perhaps be the best for my use at some place.

Within a comparatively short period there have been published two-pipe steam plans for buildings requiring about the same amount of radiation that this building requires, showing main pipe at 2 inch, 2½ inch, 3 inch and one with the starting pipe a 4 inch pipe. And while each one of the plans was very well conceived and carried out for certain conditions, not one of them was made clear enough in text so a new hand at the business, or many old hands for that matter, could understand whether conditions confronting him would be properly filled if he used the layout for his pattern for that particular job.

In this paper we will try and explain enough of the reason for each of the important selections made, to enable the youngest helper to study it out for himself if he will take the trouble. And, as he may want to study the question from the view point of several standard writers, some authorities will be mentioned from place to place from whom more complete information, or different reasons or views can be obtained. In this manner, I hope to interest the beginner in the business to get himself better informed in the science. To no one does the mistakes of the uninformed in all of the requirements of the heating business fall so hard as it does on the thoroughly competent and well informed heating engineer.

When the trade magazine teaches the ordinary plumber and steam fitter of the smaller towns and cities what the men in the large cities can get from the competent trade school and first class shop experience in regard to the reasons for doing things, they will be doing the high class engineer of heating problems the greatest service possible, as well as helping those that need it most directly, the owner and the inexperienced fitter.

The first thing to determine, when a steam heating job is to be placed, is the position that the owner desires the radiators to be placed on each floor, and in each room. This should be absolutely the first thing to be decided on, for upon this decision rests some mighty factors in your future calculations. For instance, unless you know in regard to this matter of location in advance, you may go ahead and figure, and perhaps order from the maker, radiation for some room on the assumption that you are to place the radiator on the north wall under a window, only to learn later that the owner, or his wife usually, insists that the radiator must be placed on the inside east wall in an alcove where a closet at one time existed. It is of course possible to put it there and to make it large enough to warm the room, but in five cases out of seven, to put it there after the job had been properly adjusted for the other radiator in the piping layout, will practically upset all hopes of the job doing its work evenly, or of that particular room receiving the proper amount of steam to heat it satisfactorily, unless more pressure is carried at the boiler than is needed for the rest of the radiators on the job.

Fitters should never lose sight of the fact that, for a radiator to deliver a designated amount of heat per hour to the air in a room, a definite amount of heat *must be delivered to it from the boiler*, through the pipes. Steam or hot water, as heating mediums, must be carefully measured into the radiator and proper provision made for their constant flow at a definite speed if quite exact heating results are expected.

It is in order that proper sized pipes for conveying the heating medium, whatever it may be, to each radiator in sufficient quantity and at sufficient speed can be selected, that the exact position and size of each radiator is so carefully determined in advance by the up-to-date fitter.

The great advance in the knowledge of the science of heating within the past few years in the ranks of the

everyday workmen in the larger places is a matter of general comment. Whether you live in the city or in the country, if you have any expectation of keeping up with the now rapidly moving procession in the heating line you must not only use your own brain, but must also gather in as much as possible from others. As Alfred G. King so well states in the preface to the 1898 edition of his book on "Steam and Hot Water Heating," "To keep pace with the means and methods employed we must be continually studying and actively interesting ourselves in the improvements as they are brought out. The methods of a score of years ago have given place to other and improved methods and further experimenting and study by the wide-awake American mechanics are bound to result in still further progress."

In no one part of the heating business has the change been so great, or the improvements so valuable, as in the method of ascertaining the probable loss of heat from buildings. So far as the mass of the trade is concerned it can be fairly stated that previous to the publication in 1890 of J. M. Mills' book on heating, in which he explained his famous 2-20-200 rule, their method of figuring for heat loss was the rankest guess work. In 1882, Robert Briggs published a paper on the American Practice in Heating Buildings with Steam. But this was not of much use to the common fitter because but few could understand the text. The most important book published previous to 1895 was Schuman's Manual, but this was, and is today, about as valuable to the average fitter as though written in ancient Sanskrit.

Mills' book was published less than 25 years ago and is now out of print, but can be fairly claimed as the first book written in the United States on the subject of heating that really reached the common or average steam fitters of the country in language of which they could grasp the meaning. The real beginning of modern practice, however, can be said to have been the publication of the second edition of the Frenchman Peclet's book on heat in 1859. This was soon translated into English and has been drawn on by every writer of standing ever since.

The English writers, Thomas Box and Charles Hood, whose books were published in 1876 and 1879, were drawn upon by Mills to a large degree, and although Mills' book is now out of the market, Charles Hood's "Warming and Ventilating Buildings" and Box's "Treatise on Heat" are still for sale at the large book stores. With the publication in 1895 of the first edition of Prof. Carpenter's book on "Heating and Ventilating Buildings" can actual steps forward in scientific heating on the part of any considerable portion of the steamfitters of this country be said to have commenced. It was not until after that book was published that the first publication of the transactions of the American Society of Heating and Ventilating Engineers was printed. It will be seen, then, that real modern heating in this country dates from 1895, or *less* than 20 years ago! I do not think, therefore, that it is out of the way to somewhat constantly call the attention of the young and older fitter to the books that will bring before him the best things in shop equipment that he can possibly have, namely, books that will enable him to get the most out of the tools that he goes out and buys.

A very trifling amount of figuring will show any fitter that, if he expects to secure practical results from his figuring for radiation surface under the conditions presented today by the architect and the manufacturers of present day heating material, he must teach himself how to measure all the surface in any room that is exposed to colder air. Not only must he provide for the outside exposure, but he must also take into his calculations the heat loss to colder rooms, or cold halls against which a portion of his walls may stand. I am aware that this is usually not taken by the hit and (often) miss, methods all too much in use among the men who began business fifteen or twenty years ago, and who have let the procession of new knowledge in the heating line pass by them.

But, men! Just think for a moment. If a friend of yours, down in the South, should write you that, although the outside temperature where he lived rarely, if ever, dropped below 40 above zero, that it was often too cool for comfort without artificial heat in the house and that he wanted you to figure out for him the radiation he would require, you would hardly overlook the loss of heat from the walls of the house. You would realize at once that the 30 degrees between the outside and the 70 degrees he wanted inside was lost in the same manner and from, or through the same sources, that the heat is lost from houses in Alaska, New England or anywhere else where artificial heat is used. Well, then, don't you think that if you have the whole of one side of a room which you need to heat to 70 degrees when the outside air is zero, or below, that is exposed to a cold hall, or some other cold room that is not over 40 degrees in temperature that there will be a loss of heat through that wall? Won't the loss be as great relatively as the loss through the outer wall of a house in the South when free from wind? Can you find any way to provide for that loss from figures shown by the Mills, or other rule of that type?

Under the changed conditions of boiler rating and of architects' requirements, a man is fully as safe to jump at the radiating surface required, with the old ratio rules as his spring board, as to use the Mills' rule in the form most fitters use it.

The steam fitter who, at this time, has not got into the habit of figuring very carefully for all heat losses so far as they can be located, is simply cheating himself and his own family. It is his loss if he does not get in radiation enough, and in a way it is his loss if he gets in too much.

He must remember that the manufacturer no longer stands responsible for errors. He has thrown that on the steam fitter, or the engineer. All the manufacturer guarantees today is that his boilers are perfectly made according to the pattern he is producing, or that the radiators are free from leaks, and have the amount of area which he has catalogued, but he does not tell the heating value in B. t. u. in his catalog measurement, and he rarely tells you anything definite in regard to his boiler ratings. He has thrown all such vital things as those on to the shoulders of the steamfitter and the heating engineer. The manufacturer no longer has agents for whose figures he holds himself more or less responsible; he holds himself responsible only for the perfect condition of his output of cast iron. If you do not figure your piping correctly, he is extremely sorry for you; if you do not figure your radiation correctly in addition to not figuring your piping correctly, he is intensely sorry for you, but he does not see any way to help you in the matter at *his* cost.

And why under the heavens should he help you? He does not put your work in for you. If you have not the personal knowledge needed to correctly figure out how much of the manufacturer's goods are required.

why should he make your mistakes good? If you do not order from your butcher a piece of beef large enough to supply the requirements for some single meal, do you expect him to send you the extra amount needed, at his expense?

All the butcher guaranteed was sound, sweet beef and honest weight. If you got too little, or too much, it does not particularly concern him. He puts you in the same position that the manufacturers of heating material puts you. Both of them expect that you know enough about the actual quantity of his particular goods to specify all that are required for your needs.

If your meat is burned in cooking, or as altogether too little cooked, the butcher is hardly responsible, is he?

If you have not kept up with the pace that the manufacturers have set for you, is it their fault?

If you are trying to fit their material rated on their standards of 1913 by rules in vogue in 1890, is it any special concern of the manufacturers that you have been too indolent to keep up with them in their development?

"Domestic Engineering" is doing everything it can to put you wise to what is new and practical in heating matters; it has expended thousands of dollars in gathering for you the books that will give you the information that is needed for you to keep up with the procession, so that you need no longer try to cut by 1890 patterns for 1913 jobs. Each issue, if you will read it, has something in it that you never thought of before, never knew, and very likely never dreamed was possible to do, but which has been done well by some one, and "Domestic Engineering" tells you all about it.

Now honest, just between you and me, do you know exactly why you have used a three inch main on that last job? Can you tell why you used the layout that you do, instead of some one of the at least half dozen other layouts that in the end would have worked just as well? (To be continued.)

SOME ORDER FORM SUGGESTIONS.

Hartford Master Plumber Has Worked Out Some Most Effective Blanks for Handling His Work.

Editor, "Domestic Engineering:"—I read with much pleasure the splendid article in a recent issue of your paper entitled "Bookkeeping for the Master Plumber," by Charles H. Dawson and I am sure there is not a master plumber doing business today but who can use his system with only good results.

Hartford, Conn., ... *191*

I hereby authorize **T. E. OAKES CO.,** *to do the following work at*

INSTALL
CHANGE

and charge to .....

Price quoted: .....

Payments, ...

Ordered by .....

Written orders save misunderstandings.

Fig. 3.—Order Blank for Extras.

Instead of using stiff cards for orders I find much better results by using an order blank (same as enclosed sample) which are numbered from 1 to 1,000. After a piece of work is completed these are billed up and put on a post binder for future reference and if you will look

Order № .....

T. E. Oakes Co.

Hartford, Conn. Date 191

Plumbing Dept. Workman's Order.

To be charged to ..... Business Address .....

Work to be done at .....

Instructions .....

In case customer wants changes made or additional work done, have him authorize same below, signing his name.

Customer's Signature .....

Material to make .....

Ordered by ..... Entered by .....

It is required that these reports be filled out, and handed into the Office IMMEDIATELY after work is completed.

Fig. 1.—One Side of Regular Order.

this order over carefully you will find it makes a very complete order and gives about all the information that could be asked.

"I have also gotten out an order blank (see Fig. 3), that is an excellent thing for any master plumber to use,

Charge to .....

Work done at .....

Date started .....

Date finished .....

Any material left on job? .....

Is job finished? .....

Don't fill in "Date finished" until entirely completed.

Workman's Plumbing Dept. T. E. Oakes Co.

Stock collected R by .....

Stock collected F by .....

Bill No. .....

	Fares	Hours		
Workman's Name				
Helper's Name				
State cause of trouble				
Material used				

Fig. 2.—Reverse of Regular Order Blank.

especially if "extras" are ordered and I can truthfully say it has on several occasions saved me going to the courts to get pay for extra work.

I would be pleased to have you publish these in your coming edition as I feel many master plumbers can, with help to themselves, use them. T. Edward Oakes.

156 Whitney St., Hartford, Conn.

Water—Its Properties and Practical Uses

XVIII.—Principles of the Siphon and Siphon Jet Closets. The Venting of Water Closet Installations—Other Suggestions for Installations

By F. W. TOWER

Water Closets.

THE siphon principle has the simple siphonic action, and the siphon jet, the jet action, being powerful and effective.

The siphon action operates by unbalancing the atmospheric pressure, by filling the outlet leg of the closet trap, which is slightly contracted, this contraction making it easier to create the vacuum necessary to cause the water to overflow rapidly enough to exhaust the air in the crown of the trap.

When the outflowing water excludes all air at the crown of the trap, the siphonic action on the long leg draws the contents of the bowl into the soil pipe.

Considerable water is required to start this siphonic action.

Fig. 1. Siphon Water Closet.

Fig. 1 illustrates the simple siphon type.

Where the siphon closet is superior to the washout, or washdown, patterns, is in the fact that the bowl holds a deep body of water, presenting a large surface, and discharges at the bottom, which prevents foul matter from adhering to the walls of bowl interior.

Jet action, working in conjunction with siphonic action, adds a wonderful cleansing power to the fixture when in operation.

Fig. 2 illustrates the siphon jet type.

The jet lessens the amount of water used, compared with the simple siphon type, because of the powerful pushing action of the flowing water hastening the filling of the crown of the trap, and the bore of the pipe is filled more quickly, causing the long leg of the siphon to pull the water down, and the atmospheric pressure acting simultaneously.

This type embodies the feature of absolute protection against back pressure, as the bowl always reseals, the outlet of the trap is in plain sight, and the seal cannot be broken without the fact being known.

The depth of the water in the bowl prevents the entrance of sewer air.

A water seal of about 3½ inches, and a total depth of 7 inches from the surface of the bowl to the bottom of the outlet holds enough water to completely submerge and deodorize foul matter, and prevents the interior walls of the closet from becoming fouled.

It presents the smallest exposed surface between the water line and the top of the bowl.

This type is less noisy than others, and with a low down siphon tank is almost noiseless.

The particular advantage of the siphon tank for water closet flushing purposes is that the same volume of water will discharge at each flush.

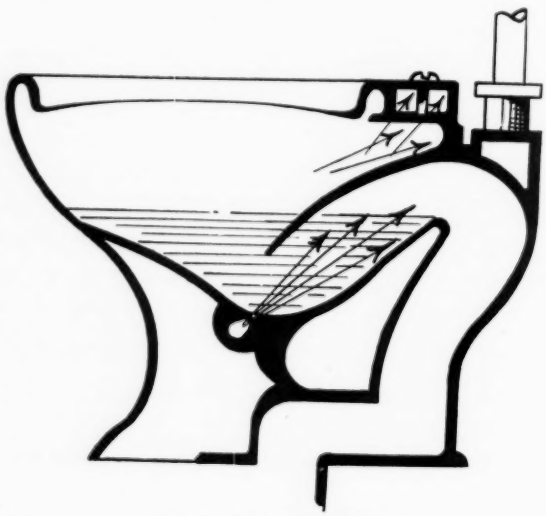


Fig. 2. Siphon Jet Closet.

If the siphon tank valve is not used, and only a simple valve is used, the volume of each flush will depend upon the time the valve is held open.

This type of closet is considered the most desirable, and is now rated as the ideal in closet construction.

The essentials required for a perfect closet are now claimed in this type, namely:

A prompt discharge of the bowl contents.

A deep seal.

A large water area to immerse solids immediately.

Noiseless in operation.

The material for all closets should be of vitrified ware, glazed, as all first grade plumbing fixtures should be wherever installed.

It has been frequently noticed, even with a short distance between the seat and the body of water in a closet bowl, that foul odors are produced and another means beside immersing foul solids has been found necessary to dispose of such offensive odors.

It has been demonstrated that by attaching a metal duct to a water closet bowl above the normal level of the

water, and extending to a heated flue, that an outward current of air is produced.

This removes the unpleasant odors incident to the use of the fixture, and secures a continuous circulation of fresh air in the room.

Both of these objects are obtained by using water closets with a raised seat vent connection.

The air is drawn over the rim of the bowl, across the water surface, and out at the back into the vent pipe.

A current of air is thus secured at the point of greatest contamination, and when the closet is not in use air is being drawn from all parts of the room, passing continuously through the vent.

The raised seat vent has a large channel with an area from about 7 to 9 square inches, and entirely unobstructed, being ample for the thorough ventilation of the closet.

The usual practice in ventilating buildings is to force air into the room.

In toilet and bath rooms the tainted air is usually drawn from a point near its source.

A continuous upward and outward movement of air through the closet vent is essential to make the ventilation of any value.

Various methods to secure this are employed.

A heated flue, as from the kitchen range, where a fire is nearly always burning, may be utilized by connecting the vent pipe into the flue, and the heat of the flue will produce a continuous rising air current.

Sometimes a good ventilator at the top of the vent pipe will serve for a limited number of fixtures.

For larger installations, such as schools, etc., artificial means are used, fans exhaust the air, causing an upward and outward flow of air.

Care should be used to see that the vent flues are of an adequate area, and should be the full size of the closet bowl arm, and increased as extra, or additional connections are made.

The style, or material, of the vent flue varies with the type of the building.

In buildings where there are but few fixtures, sheet metal pipes are used from the closet arm to the outside, with ventilators attached, or connected to some heated flue.

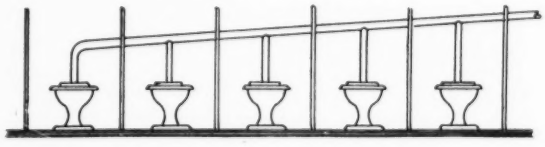


Fig. 3. Local Vent in Schools, Etc.

Fig. 3 fairly illustrates the plan.

In buildings such as schools, hotels, office buildings, railways stations, etc., especially where the toilet rooms adjoin, or are situated one above the other, these vents usually enter a vent duct especially constructed for the purpose.

To secure a uniform movement of air, unaffected by changes of season or weather, the influences of their irregular motive forces must be as far as possible reduced, and artificial methods of moving the air in the proper direction, must be employed.

There are two common, general methods employed, termed the "vacuum" and the "plenum."

In the vacuum method, the motive force is applied at the outlet; air is drawn from the room, and the pressure being less in the room than the outer air, the fresh air flows in to replace the exhausted foul air.

This may be produced by fans operated by power or by heating the column of air in vertical flues through which the discharge of the foul air takes place.

The plenum method makes the air escape by pushing instead of coming as a cold draft; it avoids drawing foul and mouldy air from sewers and basements more easily than with the other method.

The two methods are also termed the natural and forced draft systems.

The natural method, and usually the one most commonly employed, is caused by the difference of temperature between the inlet and outlet, and the currents move at very moderate velocities.

The forced draft, being made by mechanical means, any direction or desired velocity can be obtained.

The value of perfect ventilation is undisputed and the proper place to ventilate the toilet room is through the urinal or water closet.

Fig. 4 illustrates by the arrows the course of the air through a closet bowl.

The proper connection for setting an all earthenware

Fig. 4. Showing Course of Air Through Closet Bowl.

closet with the soil pipe, to make it gas and water tight, is an open question with many in the trade.

On account of shrinkage and settlement of all buildings, and the soil pipe stacks, a closet cannot be secured to the floor to ensure a perfectly rigid permanent gas tight joint by the usual floor flange.

If putty is used, it drys, and shrinks away from the plate, or bowl, or both.

Air escapes when this occurs.

Rubber will shrink and crumble with age.

With the usual brass floor flange, the closet is bolted to this plate, and the plate screwed to the floor, and if the floor shrinks, it is supposed that the flange will hold the crockery and plate firmly, and remain both water and gas tight.

A ground metal to metal joint must be fitted to an absolutely perfect bearing on all parts, and in case of unequal shrinkage this joint is doubtful.

Most closet outlets have a short spud that extends through the flange connection, and unless a stoppage occurs below this connection, and sets back no water indi-

cates a leak, but air from the sewer may be escaping, unnoticed, after shrinkage or settlement.

This escape of air is directly from the drain and unhealthful.

Some method that will indicate a leak when an imperfect joint allows such conditions, should be employed, and a closet so made that a spud would not extend through the flange.

This would allow a water sealed joint to indicate a leak whenever one occurred, by showing on the floor about the fixture.

This point on the average type of earthenware closets is the weak one, and a flexible joint that is permanent, rigid, and non-shrinkable, is a desired connection for safety.

With the siphon type of closet, powerful action and cleansing power, efficient local ventilation of both fixture and room, a defective joint where the closet and drain is connected, obviates all the precautions used to obtain **perfect** sanitary conditions.

For this reason it is of vital importance to use a joint that will remain air-tight.

LEGAL DECISIONS

Questions of Warranty With Reference to Boiler.

An owner of a house which had a steam-heating system with about 550 feet of radiation, desiring to install a boiler of greater capacity than the one then in use, examined a boiler in the home of one Scott, to which was attached at that time about 600 feet of radiation. Wishing to install a "duplicate of the Scott job," he applied to a firm for a price to furnish and install the same. In reply he received a letter stating that the firm would furnish and install a certain numbered and named boiler complete, for the sum of $213.60; that the boiler installed in Mr. Scott's residence was manufactured only on request, the one offered taking its place, but that it could be had at an additional cost of $55.

The owner claimed that after receiving this letter he had a conversation with a member of the firm in which he objected to anything but the Scott boiler, and that he was assured that the one offered was being made to take its place, and was an improvement on the Scott boiler, and that he ought not to hesitate about buying it. The house owner said that he made no further investigation of the boiler, but, relying upon this claimed statement, gave his order, and the boiler was promptly installed and the work paid for, although the dealer denied making the statement.

It was further claimed by the owner that the boiler did not give satisfaction, would not make steam and heat the house satisfactorily, and, after notifying the dealers and giving them an opportunity to make the boiler work satisfactorily, the owner had it removed from his house, sold it for $75, retaining some of the fittings, and reinstalled the old one.

The owner brought suit and obtained a judgment for $81.10, in reversing which and granting a new trial, the Supreme Court of Michigan says, in Potter vs. Shields, 140 Northwestern Reporter, 500, that there can be no question that there might be an implied warranty that a boiler is reasonably fit and suitable for the purpose for which it is intended to be used. Nevertheless, it is well established that there can be no such implied warranty where the seller has expressly refused to give a warranty. The plaintiff testified that at the time the member of the firm above mentioned came to his house a few days before he received the letter referred to, in order to inspect the premises, he said that he would not guarantee any boiler installed under the system of piping in the house. The dealer also testified to the same effect. That completely negatived the idea of an implied warranty and eliminated it from the case, and it should not have been submitted to the jury.

The theory upon which the case was tried by the plaintiff was that there was a guarantee which entitled him to have either a boiler as good or better than the Scott boiler, and that this representation and guarantee was made in the conversation which the plaintiff testified to, subsequent to the receipt of the letter. As it was claimed that there was an express warranty that the boiler should be as good as some other boiler, no other warranty could be implied on the same or closely related subjects.

It was claimed that the evidence tending to show orally an express warranty was improperly admitted, because the contract was in writing, and the general rule was relied upon that, where parties have reduced to writing what appears to be a complete and certain agreement importing a legal obligation, it will, in the absence of fraud, accident, or mistake, be conclusively presumed that the writing contains the whole of the argument between the parties, and oral evidence of prior, contemporaneous, or subsequent conversations, representations, or statements will not be received for the purpose of adding to or varying the written instrument. It may be conceded that if such a writing exists between the parties, and it contains no warranty at all, no express warranty can be added orally; and, if it contains a warranty, oral evidence would not be admitted to extend, enlarge or modify that which the writing specifies.

However, in this case, the contract relied upon consisted of a letter written by the defendants and its alleged acceptance in an oral conversation. It could not be claimed that the written instrument was the completed contract; and it has been repeatedly held that in such a case oral evidence may be had to show that a warranty constituted a part of the contract. It was the claim of the plaintiff that, before the offer made in the letter was accepted, the conversation with reference to the warranty was had; and that because of this representation the offer was accepted. Under this state of facts it was the duty of the court to submit to the jury the question of an express warranty.

MR. MANUFACTURER

You have some slow-moving machinery or material that should be known to the trade, but must be sold with the minimum expense. Describe it in the Classified Department—4 cents a word per insertion.

Questions and Answers

A NOVEL HOT WATER SUPPLY SYSTEM THAT WORKS UNSATISFACTORILY.

Editor "Domestic Engineering":—Herewith is shown a rough sketch of a hot water supply installation which does not give satisfaction. Once in a while it seems to work right, but it does not really do so, because one boiler robs the others. What is wrong?

Minneapolis, Minn. K. H.

Fig. 1 shows the connections for a hot water supply system that is out of the ordinary run, and correspondent says that results from it are not satisfactory. He gives us no detail from which to work, however, with the exception of his statement that one boiler robs another.

We would naturally suppose that the flow connections

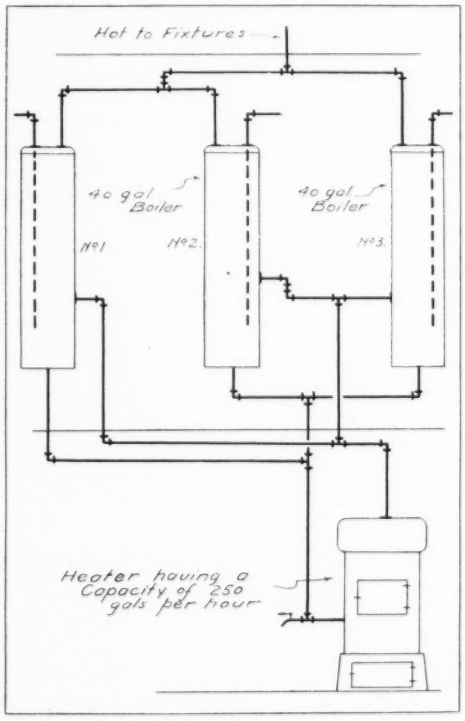


Fig. 1.

to the three boilers from the heater would result in an uneven distribution of hot water, but believe that two changes of a simple nature will do much to remedy this condition.

In Fig. 2 we show the changes which we would advise. It would seem to us that boiler No. 1 will receive the least hot water, with No. 3 next in order, and that No. 2 will receive the most. To favor No. 1, we suggest that the connection to the other boilers be taken off at C, in the manner shown. To favor No. 3 over No. 2, we would make the same connection at B that is made at C. If it should happen that No. 3 gets more hot water than No. 2, the connection should be reversed, with the connection to No. 3 taken off back of that to No. 2.

We think the hot water connections from the boilers to the fixtures can be improved by the use of double elbows at D and E. We believe that with these changes

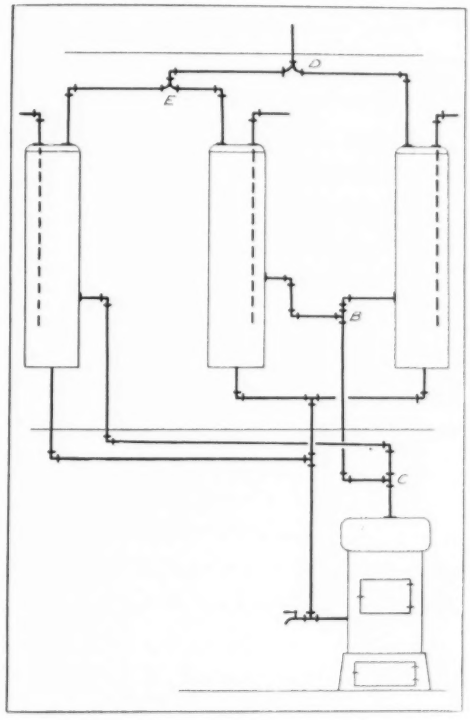


Fig. 2.

the system should be much improved. If still unsatisfactory, however, we would ask correspondent to write us again, giving us full information as to the manner in which the system fails to meet requirements.

THE RIGHT SIZE OF PRESSURE REDUCING VALVES.

Editor "Domestic Engineering":—Will you kindly publish in your "Questions and Answers" a formula for finding the proper size reducing valve to use on a steam job when reducing from a higher to a lower pressure?

Moline, Ill. T. T. T.

We know of no rule or formula for determining the size of a pressure reducing valve to use on a steam job when reducing from a higher to a lower temperature except that it is customary to use a valve of the full size called for by the main steam supply.

We believe it is better practice to employ a valve with an expanded or enlarged outlet. A valve of this type allows the steam to expand quickly into a greater volume at a reduced velocity, a condition particularly desirable for a heating system.

A valve should be selected of such size that the expanded outlet corresponds to the size of the low pressure steam main, the size of the inlet depending upon the boiler pressure carried.

For example, a boiler pressure of 150 lbs. is to be re-

duced to supply a 5-inch heating main; use a 2½ x 5-inch expanding reducing pressure valve. If the boiler pressure is only moderately high, say 75 to 85 lbs. use a 3 x 5-inch reducing valve.

The pounds of steam required for any certain purpose and the velocity through any certain size of pipe can be figured and the pipe sizes can be estimated accordingly but we know of no formula covering the application of a reducing pressure valve to this condition other than what we have stated above.

EXPANSION TANKS.

Editor "Domestic Engineering":—Will you kindly give me some information about expansion tanks? What size should they be, and how should they be connected?

Seattle, Wash. Fitter's Apprentice.

When the water in a heating system is heated to 212 degrees, it expands from one-twenty-fourth to one-thirtieth in volume, and it of course becomes necessary to take care of this additional volume in some way. This is accomplished by the use of an expansion tank.

There are several different expansion tank connections, three of which we show in our illustration.

The expansion tank in all cases should set not less than three feet above the highest radiator, and the expansion pipe should be connected to the return pipe of the highest radiator.

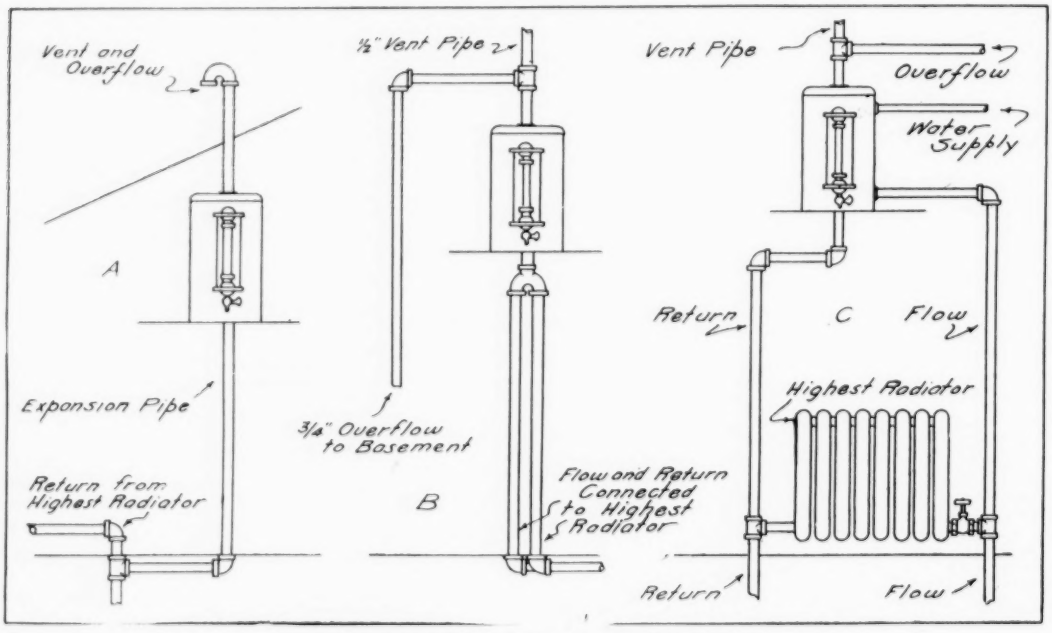
The vent pipe, which may also be used as an overflow, should pass up through the roof, or through the side of the building, so that when the system overflows, the escaping water will empty where it can do no harm.

Fig. A shows the most simple of the several expansion tank connections. When this method is used, however, the tank must be located in a room where there is no danger of freezing.

Fig. B shows connections for circulating water to the expansion tank. In this connection the two pipes should connect to the flow and return pipes of the highest radiator. When the expansion tank has to be placed in a cold room, where there is liability of freezing, we recommend the connections shown in Fig. C, by means of which a circulation is created through the water in the expansion tank.

Following is a table giving sizes and capacities of expansion tanks for heating systems of various sizes:

Radiation supplied.	Capacity	Size
300 square feet	10 gallons	12 in. x 20 in.
500 " "	15 "	12 in. x 30 in.
700 " "	20 "	14 in. x 30 in.
950 " "	26 "	16 in. x 30 in.
1,300 " "	32 "	16 in. x 36 in.
2,000 " "	42 "	16 in. x 48 in.
3,000 " "	66 "	18 in. x 60 in.
5,000 " "	82 "	20 in. x 60 in.
6,000 " "	100 "	22 in. x 60 in.



Three Different Connections for Expansion Tanks.

SUGGESTIONS FOR WORKING PLASTER OF PARIS.

Editor "Domestic Engineering":—Can you tell us of any method that can be used to prevent the settling of plaster of Paris so quickly as it ordinarily sets?

Grand Rapids, Mich. J. V. J.

In mixing plaster of Paris, if the plaster is sifted into the water, spread evenly over the surface and allowed to soak up the water without stirring, it will be found that it will not set so quickly as it does when water is poured onto it and it is stirred. The reason for this is that if worked in the latter manner, air is admitted, which sets the plaster quickly. The method that we have suggested will also prevent the forming of lumps.

To keep plaster of Paris from setting for a longer period, add one-half teaspoonful of common cooking soda to every quart of water used. A small quantity of vinegar

will also produce the desired result. The more vinegar used, the longer the plaster will be in setting. Still another method is to mix glue water with the plaster of Paris.

A JOB THAT OUGHT TO WORK SATISFACTORILY.

Editor "Domestic Engineering":—I enclose herewith two rough sketches of a hot water job installed in a baker shop. We have had a great deal of trouble with this job and would be glad to get suggestions or corrections which would help us to make it work right.

Madison, Wis. Apprentice.

In Fig. 1 we show "Apprentice's" original job, which he states gave very unsatisfactory results.

The job was then changed as shown in Fig. 2, and when the change was made, we should judge that it was thought better results could be obtained by using a vertical boiler instead of a horizontal boiler, and also that the supply from the 30 gal. boiler was inadequate.

Concerning Fig. 1, we do not like the connection of the flow pipe from the small heater into the flow pipe from the large heater. In such a connection as this, when both heaters are working, the flow from one is liable to interfere with the free flow of the other. It would also be better to connect the return or circulating pipe into the return from the boiler to the heaters. Outside of these two criticisms Fig. 1 seems to be O. K.

Concerning Fig. 2, we cannot see anything that would cause poor results.

We do not know whether both heaters are in operation at the same time, or whether the small heater is used only during that part of the year when the large heater is not being run.

If both heaters are in use at the same time, it would

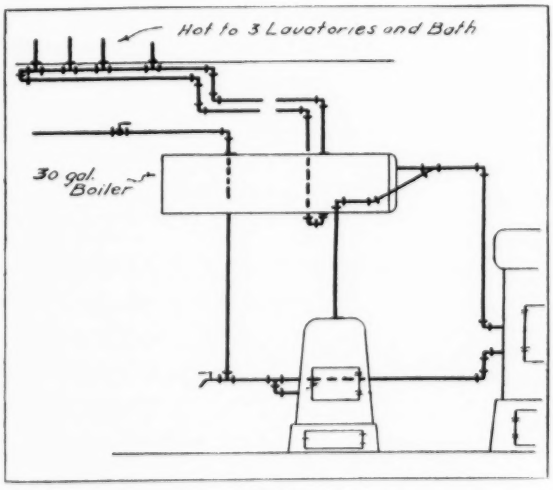


Fig. 1.

seem reasonable to suppose that they would easily heat a 40 gal. boiler.

If only one is used at a time, it may be that there is not sufficient heating surface to properly heat the boiler. We would suppose that for boiler shop use, the water would have to be very hot, and also that a large amount of it might be required. Owing to the fact that it is a circulating job, we think that the last fixture on the line should get practically as good service as the other fixtures.

To get good results the flow pipe from the boiler should rise throughout its course, to the point where the circulating pipe starts. We would advise "Apprentice" to look over the piping to see that this has been done.

It may be that poor fires are kept in the heaters.

We would suggest that in Fig. 2, the flow pipe from

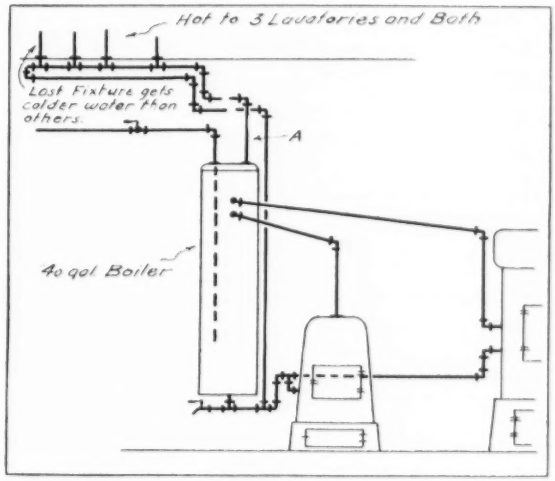


Fig. 2.

the small heater be connected into the flow pipe from the boiler at the point A. This would give a quicker and more direct supply of hot water to the fixtures.

BURSTING OF A DOUBLE BOILER.

Editor "Domestic Engineering":—As a plumber and a reader of your valuable journal, may I ask you to help me to solve this problem?

An 80-gallon, double copper boiler bursts at 7 a. m. The boiler is in a four-story house in New York, connected to a range in which there was a small fire during the night. The fire was below the water-back, and the lid of the range was half off. Several weeks previous the boiler had been taken down and a new inside boiler put in the old outside shell. The splits were all on the side, on a line, as if it were a seam, about 2 feet from the bottom at spaces 4 or 5 inches apart. One of the splits seemed to have been there before and to have been soldered. This happened in the summer, so it was not caused by frost.

What is the most logical cause for a boiler to burst under the above-mentioned conditions?

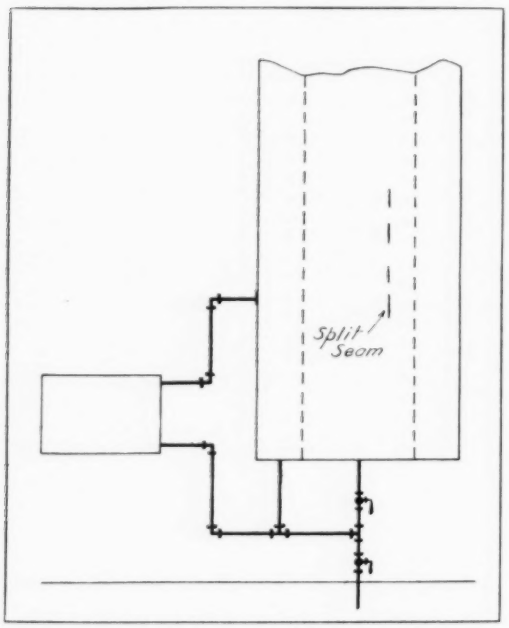
New York City. R. M. J.

There seems to us no question that the inner boiler had a weak or defective seam, and that the burst was due to this fact. This would seem to be borne out by the fact that part of the seam appears to have been split before and then soldered.

Whether there was some undue pressure brought to bear on the inner boiler, we, of course, are unable to say, and very likely our correspondent can give no light on this matter. For his enlightenment, however, we show how similar damage to the inner boiler is sometimes brought about. If the inner boiler should be drained alone, a partial vacuum would be created in it,

which, with the pressure of the water in the outer boiler, might result in the bursting or collapsing of the inner boiler, and this of course would occur at the weakest point, which, in the case of this boiler, was unquestionably the seam.

To guard against any such happening, special drainage



Special Drainage Connections to Prevent Boiler from Bursting.

connections are used for the double boiler, which we show in our illustration.

With these connections, in order to empty the inner boiler, the lower valve, controlling the drainage of the outer boiler, must first be opened, thus allowing both boilers to drain at the same time, and removing any possibility of danger to the inner boiler.

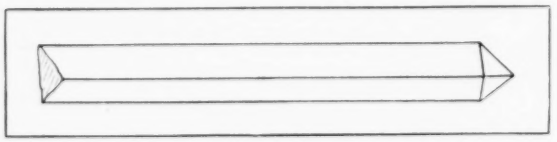
We think it possible that something of this nature may have happened to correspondent's boiler.

DRILLING HOLES IN VITRIFIED TILE.

Editor "Domestic Engineering":—Please inform me as to the best method of drilling holes in vitrified tile.

Chicago, Ill. Subscriber.

We believe that if "Subscriber" will follow the instructions given below, he will be able to do this work in a satisfactory manner.



Drill for Use on Vitrified Tile.

Use a drill of the kind shown in our illustration. If such a drill is not available, it may be made out of an old three-cornered file. The file should first be softened, after which it can easily be filed into the proper shape, and then re-tempered. The drill should be revolved rapidly, and its work may be facilitated, using a solution of camphor and turpentine.

THE USE OF LEAD PIPE IS ADVISED.

Editor "Domestic Engineering":—I have to connect a plumbing system in a residence with a tap in the water main in the street. The pipe, from the main to the inside of the house-wall, has to pass over an encased steam main. What is best for this purpose—brass or lead pipe? The cost is no object. The soil through which the pipe will pass is good clay loam. Will this soil have any chemical action on these two kinds of pipe?

Wilkes-Barre, Pa. P. N. A.

Our advice would be to use lead pipe for this job rather than brass pipe. The zinc which enters into the composition of brass would be more subject to chemical action than lead, and for this reason we would prefer lead. Expansion and contraction would be greater in the case of brass than lead, which is an additional reason for using lead. Chemical action is stronger in the presence of heat, but as the steam pipe is encased, we do not believe that if lead pipe is used, there need be any fear of damage from chemical action.

TO FIND THE CAPACITY OF A RECTANGULAR TANK.

Editor "Domestic Engineering":—Please publish the rule for finding the number of gallons in a rectangular tank, taking as an example, a tank 10 ft. x 5 ft. x 3 ft.

Dallas, Tex. "Inquirer."

The rule for finding the capacity of such a tank, in gallons, is as follows:

Multiply together the three dimensions, given in feet, and multiply the result by 7.476, the number of gallons in one cubic foot.

Working out the example given by "Inquirer," we have the following result:

$$10 \times 5 \times 3 = 150 \text{ cu. ft.}$$
$$150 \times 7.476 = 1121.4 \text{ gals.}$$

If the dimensions are given in inches, multiply the three dimensions together, and divide the result by 231, the number of cu. in. in one gallon. In the case of the above example, the result would be as follows:

$$120 \times 60 \times 36 = 259{,}200 \text{ cu. in.}$$
$$259{,}200 \div 231 = 1{,}122 \text{ gals.}$$

There is a fraction of a gallon difference between the two results, figuring in inches being slightly more accurate than figuring in feet.

A JOINER, ALL RIGHT.

That's a nice-looking fellow who's just come in," said the young man who was dining with his best girl. "Is he a friend of yours?"

"Yes, indeed, I know him well," the maiden replied.

"Shall I ask him to join us?"

"Oh, George!" said the girl, blushing, "this is so sudden."

"Sudden? What do you mean?" he asked in surprise.

"Why—why, that's our young minister."—Ladies Home Journal.

A Plumbing Ordinance for a Small Town

The Town of Morrison, Illinois, With a Population of But 2,500, Has Recently Passed the Ordinance Reprinted Herewith

Sec. 598—Certificate Required. Any person desiring to engage in or work at the business of plumbing in the city of Morrison, either as a master plumber or employing plumber or a journeyman plumber, shall obtain a certificate from a board of examiners as provided for by the statutes of the State of Illinois.

Sec. 599—Inspector. The Superintendent of Waterworks is hereby made ex-officio plumbing inspector of the city of Morrison.

Sec. 600—Duties and Powers. The plumbing inspector shall have the authority of a policeman of the city of Morrison. He shall be charged with the enforcement of this ordinance, and shall have power to act in all special cases not distinctly covered by this ordinance. He shall have charge of all papers relating to this ordinance, and the issuing of permits. He shall keep a record of his work, and shall make a written report to the City Council whenever required, and shall, once a year, give a synopsis of the year's work. He must see that every plumber working at the business, either as a master or journeyman plumber, has a certificate from a board of examiners. He shall have his office at the City Hall, or at some other place designated by the City Council. His books and records shall at all times be open for inspection by the mayor or other members of the city council.

Sec. 601—Inspection. The plumbing inspector shall have access during all hours of the day time to all buildings in the city of Morrison for the inspection of existing systems of drainage, and shall be given every opportunity for a careful examination. If the same is unsanitary—that is to say, is dangerous to health, it shall be condemned, and the building made sanitary within six days after notice is given in writing. Failure on the part of the owners to make such changes as will render said drainage or plumbing sanitary shall subject the offender to a fine of not less than five dollars nor more than one hundred dollars.

Sec. 602—Permit; How Obtained. A permit for the drainage of any building, public or private, or for the alteration in existing systems of drainage, shall be obtained from the plumbing inspector before entering upon any work, whether new work or repair work, which permit shall be good for one year from the date of issue and shall be secured by the plumber who does the work. If the work is not completed within that time the permit shall be returned and a new permit issued. The permits to the property owner for tapping a public sewer and connecting therewith, shall be secured from the City Clerk. Permits for plumbing will be granted within 24 hours. All permits shall be returned within 24 hours after completion of work. All permits shall be issued in duplicate form and numbered consecutively, and dated. One copy shall be kept on file in the office of the plumbing inspector.

Sec. 603—Plumbers to be Licensed. Any person desiring to engage in, or work at the business of plumbing in the city of Morrison as a master plumber or employing plumber, shall first obtain a license so to do for each establishment or place of business so to be maintained by him, and shall pay for every such license the sum of twenty-five dollars per year or any part thereof, and no license shall be issued in pursuance of this ordinance to any person who does not hold a certificate from a duly qualified board of examiners of plumbers, as required by the laws of the State of Illinois.

Sec. 604—License; Application; Bond. Every person desiring said license shall file with the City Clerk an application in writing, giving his name and the name of any firm of which he may be a member, and the location of his place of business, together with his certificate from a duly qualified board of examiners in the State of Illinois authorizing him to engage in or carry on the business of plumbing, either as master plumber or employing plumber, and such applicant shall also file with the application aforesaid a bond in the penal sum of two thousand ($2,000.00) dollars, running to the city of Morrison, with two sureties (or one duly licensed surety company) to be approved by the Mayor, conditioned for the faithful performance of the duties required by ordinance, rule or regulation of the City Council, and that he or they will suitably guard and protect any excavation or obstruction, and defend, save, keep harmless and indemnify the said city of and from all actions, suits, costs, damages and expenses whatsoever, including attorney's fees, which shall or may at any time happen to come to it, or on account of any injuries or damages received or sustained by any party or parties, caused by any negligence in either the execution or protection of his or their work or from any unfaithful or inadequate work done under or by virtue of his or their license.

Sec. 605—Clerk to Issue License. Upon compliance with the requirements of the preceding section the City Clerk shall issue to such applicant a license, which shall be signed by said clerk, and no such license shall be granted for a longer period than one year, or the unexpired portion thereof, so that all such licenses shall expire on the first day of May in each year, and no license shall be issued for any period for less than the amount of the license fee fixed for a whole year.

Sec. 606—Licensed Plumbers Responsible for Agents. All licensed plumbers shall be held responsible for all acts of their agents done by virtue of his or their license, and when two or more persons shall become partners a license shall be issued in the name of the firm or acting partnership, and no license shall be transferable.

Sec. 607—Change in Name or Location; License to be Posted. Any change of the firm name or location of business must be promptly reported to the plumbing inspector, and the license shall be kept posted in a conspicuous place at the place of business.

Sec. 608—Penalty for Not Having License. No person, firm or corporation shall carry on the business of plumbing, or do any plumbing work in the city of Morrison, without first having obtained a license as hereinbefore provided, under a penalty of not less than twenty-five dollars nor more than one hundred dollars for each and every offense.

Plumbing Standards.

Sec. 609—Requirements. All plumbing and drainage work hereafter constructed, whether new work or repairs, shall conform substantially to the standards hereinafter created, the observance of said standards being deemed material as a sanitary measure for the preservation of public health, and it is hereby declared to be unlawful to

erect, construct, or remodel or repair any plumbing or drainage, except in conformity with such standards.

Sec. 610—Iron Pipe and Fttings; Quality; Weights. All soil, waste and vent pipes, except as hereinafter specified for lead branches, shall be either extra heavy cast iron pipe coated with tar or asphaltum inside and outside, or standard galvanized wrought iron pipe. Wrought iron pipe coated with tar or asphaltum may be used for soil or waste pipes only. All pipes shall be sound and free from holes, cracks and defects of any kind.

The following weights per lineal foot will be accepted as complying with this chapter as to weight of extra heavy cast-iron pipe:

Diameter.	Weight Per Lineal Foot.
2 inch	5½ pounds per lineal foot
3 inch	9½ " " " "
4 inch	13 " " " "
5 inch	17 " " " "
6 inch	20 " " " "
7 inch	27 " " " "
8 inch	33½ " " " "
10 inch	45 " " " "
12 inch	54 " " " "

The following weights per lineal foot are required for standard wrought iron pipe, or tar coated pipe:

1¼ inch	2.24 pounds per lineal foot
1½ inch	2.68 " " " "
2 inch	3.61 " " " "
2½ inch	5.74 " " " "
3 inch	7.54 " " " "
3½ inch	9.00 " " " "
4 inch	10.66 " " " "
4½ inch	12.49 " " " "
5 inch	14.50 " " " "
6 inch	18.76 " " " "
7 inch	23.27 " " " "
8 inch	28.18 " " " "
9 inch	33.70 " " " "
10 inch	40.00 " " " "

All fittings used for soil, waste or vent pipes, except as hereinafter specified, shall be either extra heavy tar or asphaltum coated cast-iron fittings; or galvanized malleable or cast, recessed and threaded drainage fittings. The burr formed by cutting the wrought-iron pipe shall be carefully reamed out.

Sec. 611—Lead Pipe; Weights. All lead pipe used for branch soil, vent or flush pipes shall be of best quality of drawn pipe, of not less weight per lineal foot than shown by the following table:

Internal Diameter.	Weight per Foot.
1 inch	2 lbs. 8 oz.
1¼ inch	3 lbs.
1½ inch	4 lbs.
2 inch	5 lbs.
3 inch	6 lbs. 8 oz.
4 inch	10 lbs.

Sec. 612—Lead Pipe Connections; Wiped Joints. All connections between lead and metal pipes shall be made by heavy brass solder nipples, or heavy brass or combination ferrules. All solder connections shall be regulation wiped joints.

Sec. 613—Soil Pipes. All soil pipes shall be of extra heavy cast iron, not less than four inches inside diameter, coated while hot, inside and outside, with asphaltum or tar, or standard galvanized wrought iron pipe, or wrought iron pipe tar coated. They shall extend through the roof at least one foot; if receiving the discharge of more than five water closets and five other fixtures, or their equivalent, they shall be increased in size to six inches; soil pipes through roofs must not open within fifteen feet horizontally of any window, door or opening; no cap or cowl will be allowed on the pipe; the main soil-pipe shall be run with as few offsets as possible; offsets shall be made with one-eighth bends or offset fittings. Where the base of a soil-pipe stack turns through the wall to connect with the sewer, the change in direction shall be made with a "Y" and one-eighth bend, using cleanout plug in end of "Y"; the joints shall be made with picked oakum and lead; one pound of lead shall be required for each inch of diameter of pipe.

Sec. 614—Waste Pipes. Waste pipes may be of wrought iron, galvanized or tar coated, of lead, or of 2-inch cast iron; in no case shall any waste pipe be less than 1¼-inch inside diameter. Waste pipes from wash basins shall not be less than 1¼ inches in diameter, and waste pipes for wash trays, bath tubs, slop sinks, sinks and urinals, shall not be less than 1½ inches in diameter.

Sec. 615—Traps and Vents. Each fixture connected with the drainage system shall be separately and effectively trapped; traps shall be placed not more than one foot from the outlet of the fixtures. A grease trap shall be constructed under the sink of every kitchen, eating house, restaurant, or other cooking establishment, which may be placed in basement directly under sink, such grease trap to be not less than seven inches in diameter and ten inches in depth. It must have some means of cleanout exposed to view and be easily accessible, and shall have a perfectly smooth interior. In case of bath tubs, a 4-inch drum trap shall be used, with a flange top flush with the floor. All traps shall be protected from siphonage by using vent pipes, except a permit to use an approved form of non-siphon trap may be secured from the inspector; and except in case of closets as hereinafter provided. Re-vent pipes shall not be less than the diameter of the waste pipe they serve. In no case will the vent for a fixture be allowed to be taken out of the vertical vent pipe on a line with the crown of the trap, but shall be run at least two feet above the fixture it serves before connecting with any other vent pipe or stack. All branches of soil or waste pipes twenty feet or more in length shall be extended full size, and carried through and above the roof. If less than twenty feet in length they may be either returned full size to the main vent pipe or carried through the roof, but in no case shall a smaller pipe than four-inch pass through the roof. No re-vent pipe shall run so as to form a trap; all re-vent pipes shall be of galvanized iron, lead or cast.

Sec. 616—Refrigerator Wastes; Sizes; Traps. The waste pipe from a refrigerator or ice box shall not be directly connected with any soil, rain or waste pipe or with the drain or sewer, or discharge on the ground. It shall be discharged into an open water supplied sink or over a deep sealed trap and shall be as short as possible and disconnected from the refrigerator or ice box by at least four inches; and where refrigerators or ice boxes are placed in buildings and upon two or more floors, the waste and vent pipes thereof shall be continuous and shall run through the roof and in no case shall it be open within six feet of an open soil or vent pipe. The size of a waste pipe for refrigerators for 2 floors or less shall be at least 1½ inches, and 2 inches for 3 floors and over and under 5 floors, and 2½ inches for 5 floors or over. Each refrigerator or ice box shall be provided with a suitable trap with an accessible trap screw or cleanout. Such trap shall be placed in the 1½ inch branch waste pipe and shall be near the refrigerator or ice box. Such traps need not be separately re-vented.

Sec. 617—Rain Water Leaders and Cistern Overflows.

Rain water pipes or leaders shall not be used as soil, waste or vent pipes; nor shall any soil, waste or vent pipe be used for a rain water pipe or leader.

Where a rain water leader opens near a window, door or ventilating shaft, or is so located as to render it likely to become a nuisance, if not trapped, it shall be properly trapped far enough below the surface to prevent its becoming a nuisance or freezing. Inside rain water leaders shall be made of extra heavy cast-iron; or asphaltum or tar coated wrought iron; or galvanized wrought iron pipe; with roof connections made gas and water tight by means of heavy lead and iron or lead and brass combination ferrule securely calked or screwed in place and flanged and soldered to the roof. Outside rain water leaders may be of sheet metal, but they shall connect with the house drain by means of a cast-iron pipe extending vertically at least four feet above the grade level, and must in every case be trapped below the frost line.

No cistern overflow shall connect directly with the sewer, but may waste over an open water supplied sink.

Sec. 618—Floor Washes; Prohibited Traps; Back Water Valve; Garage Drains. Where floor washes are connected it shall be by means of a deep seal trap. Bell traps and cast-iron S and P traps having covers over hand holes on the sewer side of the trap, held in place by lugs or bolts, are prohibited. Where a floor drain is placed in a basement, it shall be protected from back sewage by means of some suitable and approved back water valve or stop.

All floor drains for private garages shall be Wieben Gasoline and Oil Separator, or its equivalent, properly connected. All public garages shall be provided with a gasoline and oil separator operating on the same principle, of suitable size to meet all conditions under which it may operate.

Sec. 619—Exhaust Pipes. No steam, exhaust, blow-off or drip pipe shall connect with the sewer or other house drain, soil or waste pipe. Such pipes shall discharge into a tank or condenser from which a special vent pipe, not less than 2 inches in diameter, shall extend through the roof, and a suitable outlet into the house drain shall be provided; but no gas or gasoline engine exhaust pipe shall be in any manner connected with the sewer.

Sec. 620. Water Closets; Prohibited; Ventilation; Flushing; Venting; Connections. No front or back washout closets or closets requiring mechanical device such as plunger or pan closets, shall be used in new work, and when such closets are removed for repairs they shall not be replaced. Water closets shall either be placed in rooms opening into the outside air, or otherwise connected with an 8-inch by 8-inch flue extending above the roof. Water closets within the house shall be supplied from special tanks of five gallons capacity or more, and used for no other purpose. The flush pipe shall be not smaller than 1¼ inches in diameter; the trap shall be in the bowl, and above the floor, with a large body of water exposed to view and sufficient to immediately cover, and thus temporarily disinfect and deoderize the excreta. Such closets when placed more than six feet from the main soil-pipe stack shall be re-vented with two-inch pipe from lead bend under the floor, or the soil pipe extended full size above the roof. Where two or more closets, one placed above the other, discharge into the same stack, all such closets except the upper one, shall be re-vented as directed above.

All earthenware and closet traps shall be connected to waste or soil pipes by heavy brass floor or wall flanges; where lead, brass or iron bends are used they shall be soldered, screwed or calked to the same and bolted to the trap flange.

Sec. 621—Out Door Water Closets. When water closets are placed outside of buildings they shall be separately trapped and flushed from a tank filled automatically with seat pressure. All shall be protected from frost, and the part underground placed in a compartment at least three feet by four feet by five feet deep, made of cement, masonry or concrete. The enclosure to water closets shall be ventilated with slatted openings in doors; the waste water from hopper cock shall be trapped and properly connected on inlet side of main trap.

Sec. 622. Urinals to be Flushed. Each and every urinal trough and bowl shall be intermittently and automatically flushed with at least one gallon water flush for each urinal bowl or two foot length of urinal trough; and shall be flushed at least once every three hours.

Sec. 623—Other Fixtures. No fixture shall be boxed in or enclosed with sheeting or doors; all shall be open plumbing. When old fixtures are removed for repairs they shall not again be boxed in. All fixtures except water closets shall waste through strong metallic strainers. All fixtures shall be non-porous and non-absorbent. The overflow from fixtures shall connect with waste on house side of trap.

Sec. 624—Closure of Openings. If drainage pipes are put in for future use, they shall have all openings securely closed by soldering or calking, so as to be perfectly tight.

Sec. 625—Penalty, for Violating Provisions of this Chapter. If any plumber shall be guilty of violation of any of the provisions of this chapter, or any of the ordinances of this city relating to plumbing or ventilation, or any lawful rules and regulations of the City Council or Health Department relating to plumbing and ventilation, the inspector shall refuse to issue any permit to said plumber, or his license shall be revoked by the Mayor, and such plumber shall not be entitled to any new or further license; and in addition thereto he shall be subject to a fine of not less than five dollars nor more than one hundred dollars.

GOVERNMENT CONTRACTS TO BE AWARDED.

Supervising Architect Oscar Wenderoth, Treasury Department, Washington, D. C., will receive sealed proposals for government work as follows:

Until 3 p. m., December 16, 1913, for the construction, including plumbing, heating and lighting, of a one-story mezzanine and basement, brick-faced building, 3,450 square feet ground area, for the United States post office at Marlin, Texas.

Until 3 p. m., December 16, 1913, for the extension, including plumbing, heating and lighting systems, of the United States post office at Winston-Salem, N. C. The extension is to be two stories and basement and has a ground area of approximately 14,150 square feet.

Until 3 p. m., December 18, 1913, for the construction complete, including plumbing, heating and lighting, of the United States post office at La Junta, Colo. The building is to be two stories and basement with a ground area of 5,240 square feet.

Drawings and specifications may be obtained from the custodians of the different sites or at the office of the Supervising Architect in Washington, D. C.

Moundsville, W. Va.—F. C. Bartley & Co., of Cumberland, Md., has secured a contract for the installation of a vapor heating system in the Court House now being built here. Contract amounts to $2,595.00.

Business Methods for the Master Plumber

IV.—The Importance of a Careful Study of Estimating Methods Is Brought Forth in Forceful and Most Convincing Language

By WESLEY A. FINK

IF we look up the word "Estimating" in Webster's dictionary, we will find that "estimating means to calculate the probable cost." Many master plumbers and fitters in the past have thought that estimating meant to guess at the cost and forget there was such a thing as profit. The reason for this was that there were no rules to guide them in estimating, and those who gathered the proper knowledge by years of experience and study, jealously kept that knowledge to themselves. Shops in the past also did not keep sufficiently accurate records to be of real value to the estimator, but with the installation of a cost system the estimator has records to refer to and thus guessing should be greatly eliminated.

It is a common experience of men who get bids on plumbing work to find that estimates received from different plumbers on the same piece of work vary so widely, that it is difficult, and in some cases impossible, to determine from the figures submitted, the actual value of the work to be done. That is, not the price at which it can be bought, for that is usually shown by the lowest figure, but what the plumber really should receive for the job.

The variation in estimates on the same job of plumbing has always been a puzzle to men in other lines of business, and this seeming inability to put a definite price on their work has been the cause of much uncalled for criticism of the plumbers' business ability. That this variation is justified in the great majority of instances is due to the fact that the plumbing business is one in which each individual job, as a rule, has to be handled differently and under conditions peculiarly applicable to that particular job. One rule will not answer in every case, even when the conditions are seemingly the same. It is not only difficult to estimate how much time it takes to get out a job or determine the amount of work a man can do but impossible to the extent of absolute accuracy. Estimating is more or less guesswork.

It is frequently a good plan to confer with the foreman or the workmen regarding the length of time required for a certain job, but you should bear in mind that the workmen's estimate of the time is more apt to be too low than too high. The fact that one man will do a certain job in much less time than another will take to do the work, need not interfere with the general results in a year if the proper average is used in making the estimate.

No part of the work of an employing plumber and fitter requires more care than the making of estimates. The calculations cannot be made correctly without a knowledge of the cost of producing work; hence, they require to be made by a practical man, and the more knowledge he has of the details of the business the fewer mistakes he is liable to make.

There are plumbers who know the cost of work, but who deceive themselves as to their ability to rush work through, believing that they can produce work more cheaply than their competitors. It is a mistake for any master plumber to assume that he is smarter than those who compete with him for trade, and that his clever management enables him to get out his work ten or fifteen per cent cheaper than others. Such men are usually hustlers themselves and better and faster workmen than the average of those they hire.

The estimators must be careful not to judge of the proper time on a job by the time that they themselves would require for its execution. To judge of the time required on a job one must allow for the average time that the average workman would consume in getting it out under average conditions. The business plumber who really is smarter than his fellows can always be depended upon to charge enough for his work, and if he can rush it through in less than the average time, he will know enough to pocket his legitimate profit and not give it away.

The estimator must be continually upon his guard against overlooking any of the details which enter into an estimate. Constant vigilance is the price of success in the estimator's occupation, and the slightest lapse of attention may bring serious results. Every estimator suffers more or less from the thought that possible errors may creep into his estimates unknowingly, and certainly without intent, but the best that he can do is to guard himself in every way against omissions and errors which affect his work.

The estimator must never forget and he must never overlook details of cost which enter into an estimate. The checking up of the items of cost after the estimate is finished is a great help in guarding against errors of this kind, and where there are more than one estimator in an office, it is a good plan for one person to check over the figures of another, for one man will often make the same mistake twice in checking over his own work, whereas another estimator will easily see the error.

The most careful of men will make errors at times, and only by systematic proving of the figures can the estimator avoid loss. He should figure each item of cost separately, so as not to confuse them, and examine each to see if it is right, before he totals the lot. For instance, one may estimate on a job by taking every item at cost, adding all general expenses and a final profit. Then one may prove this by calculating the number of hours' or days' work on the whole job multiplying by the price per hour customarily charged and then adding for cost of material, etc., required. A third way is to calculate the labor and material at the same rates charged on jobbing work, known to yield a profit. This latter method has the advantages of quickness, but is an unsafe way, because the estimator is not brought face to face with the actual cost, and is too apt to think that he can drop off ten per cent to get the job and yet make a profit. The plumber who figures his large jobs in two or more ways, and finds that his totals are nearly in agreement, has positive assurance that his figuring is correct. If he finds a material difference in the totals obtained by the three methods, the reason for the difference can be hunted for and found, and a possible serious error is avoided.

An estimator, to use the dictionary definition, is one who estimates, but to the average plumber he is the one who attempts to guess how much the customer will be willing to pay for the proposed job. The estimator is always confronted with the error of fixing the price too

high to get the job or too low to show a profit, and he should to the best of his ability choose the happy medium of a price which will secure the work and also show a profit.

An estimator who is true to himself, does not estimate what he thinks, but carefully calculates the amount of time it will take the average workman to do the work with the facilities afforded by the shop in which he is working. The price at which the job is actually offered and sold may be fixed by adding a certain profit to the estimated price or by throwing away some of the real cost, but that does not affect the correctness of the estimate. All estimates should be calculated as nearly as possible to the real and true cost of production, regardless of whether it is going to be sold close or at a large profit. Estimating is coming to be an exact science, and as such, an estimate should include every item of cost entering into a job.

When it comes to the point of deciding the amount to be added for profit there are many modifying considerations. The chief of these is the necessity for keeping a permanent force of hands employed. Any idle or partially employed help increases the ratio of overhead expense, and consequently the cost of work. The next is the position of competing firms with respect to work, the same necessity for reducing the ratio of overhead expense operating to induce them also to reduce the margin of profit. A third consideration is the general outlook of the market, and this, in certain conditions of trade, becomes almost paramount.

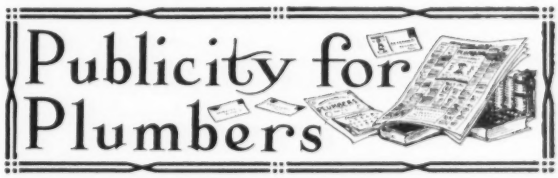
Such conditions as competing prices, the customer's standing and financial responsibility, prospects of future work, method of handling, etc., should enter into the decision in fixing the price, and better results can be obtained by this method than by standing arbitrarily for a fixed percentage on all work. By reference to prospects for future business, it is not meant to infer that a low price should generally be placed upon a piece of work in the hopes of influencing the buyer on another and perhaps larger job in the future. Every job should stand on its own bottom, but a slight price concession can sometimes be made to benefit the shop materially in securing other and more profitable work.

It seems to be the regular formula for the young man, or the old, too, for that matter, entering into the plumbing business for himself, to feel and say, "I must get business on price at first until I get on my feet and become established." But there would be less difficulty in dealing with men who undercharge, if the average employe were made better acquainted with the actual cost of producing work. If proprietors would occasionally take an hour and explain to employes all the items that go to swell the cost there would be fewer employes setting up in business for themselves and cutting prices to get work.

Is it not a part of our duty when teaching men the trade to instruct them how to ascertain the cost of work that they may not deceive themselves? If this course were generally followed, would there not be more good plumbers willing to retain places as journeymen or foremen at comfortable wages rather than entering into competition with their former employers? Many and many a bright young plumber has started up for himself with an entirely mistaken notion as to what he must charge to come out even, and becomes a price cutter, worrying along for a year or two until he either learns better or makes a failure. Of course such men eventually learn to their sorrow that their course was a mistaken one, but when this knowledge comes the evil has been done to them and their competitors; and when such price cutters have been brushed aside by the inexorable laws of trade that require a profit for a continuance in business, then, unfortunately, some other over-zealous and under-informed plumbers rise to take their places, and so the demoralization in trade is kept up. If means were devised for making such men see the error of their ways quite early in their careers, it would be a great boon to the trade as a whole.

The curse of the plumbing business is the man who does not understand his business; who does not understand what it costs to do plumbing or heating work under ordinary conditions, and who in taking a job figures his own work on his own salary at nothing.

It may seem an exaggeration to say that the majority of owners of plumbing shops do not know what plumbing work actually costs them, or what it should be sold for; nevertheless this is a fact. Plumbers everywhere are agreed that prices are too low, and the profits of the business inadequate.



The Use of Good Stationery.

As business customs have changed, so has the standard set by business men in judging those dealing with them changed as well.

This is no more true in the personal contact of business men than it is in the written word which now forms such a large part of the business transactions of the day.

Most manufacturers, jobbers and others who are dealing with the master plumbers and fitters are prone to judge the men they deal with largely by the correspondence paper and the style of stationery used by their customers.

Many of the successful firms, both in the manufacturing and the supply lines, have standardized their stationery so that one quality of paper is used for practically all of their business forms, including envelopes, letter heads, invoices, statements, drafts and all of the smaller forms that they ordinarily use.

"Domestic Engineering" has for years used a bright orange or golden rod bond paper for letter heads and the other business forms required by this paper. A change is now being made in the stationery used so that a color of "Construction Bond" similar to that used on our cover each week will appear on all the stationery. This bond paper is a high grade sheet and is marketed by W. E. Wroe & Company, wholesale paper dealers, of 1006-8 Michigan Avenue, Chicago.

This firm will no doubt be glad to forward a sample book of their various weights and colors of "Construction Bond" or any of their other papers to manufacturers, jobbers and master plumbers and fitters who will write them for it. The sample book contains suggestions for the arrangement and makeup of letter heads and envelopes that will be found most valuable.

Geo. F. Wiley is working on a project at Vale, Ore., to utilize hot springs in that vicinity for heating purposes, intending to furnish heat and hot water for household purposes for the entire town, and to build a fine sanatorium at the springs.

Fads & Hobbies

The Champion Lady Swimmer of the Plumbing and Heating Trades.

Miss Martha Kasjens, the 18-year-old daughter of J. C. Kasjens, president of the Brass Foundry & Heating Co., of Peoria, Ill., on August 31st established a new amateur record between Peoria and Pekin, Ill., by swimming the distance of ten miles in four hours and thirty-four minutes. A rough head wind delayed her speed in two different portions of the distance, while for a few minutes at one time she swam through a squall of wind and rain.

Miss Martha Kasjens in Her Record Swim of the Illinois River Near Peoria.

During the long swim she did not leave the water. She rested but once for five minutes alongside an accompanying skiff, and was fed on two occasions with milk and chocolate tablets.

Dressed in a light jersey swimming costume without skirts Miss Kasjens was ready at 8:30 in the morning. She wore a tight fitting rubber bonnet, as can be seen in the accompanying illustration, to keep her hair from getting wet and tangled, and she had been rubbed with oil in an effort to keep warm during the long performance. She shivered a little as she slipped from the side of the launch which was to accompany her, but in a few seconds was smilingly on her way to Pekin. The water was cold, though smooth, and she worked rapidly in an endeavor to keep warm. Everything went fine for the gritty girl until she reached Kickapoo where she encountered the first difficulty. A sudden squall of wind slashed across the river, bringing a shower of rain with it. The choppy waves it produced slapped the swimmer in the face and the work became strenuous. Choking several times, forced to swim on her back at long intervals, she stuck gamely to the work. The wind dropped out as she passed Wesley City, and down through the long stretch toward Seven Mile Island she had easy swimming. Just before reaching this point she was fed milk and chocolate tablets, eating them as she swam along between two escorting skiffs. Passing Seven Mile Island at 12:22 she was still in such fine trim that she was laughing and jollying with her escorts and waving her hand at passing launches and fishing parties on the shore. A mile further down she began to show the first signs of weariness and was again fed with milk tablets and given a drink of water from the side of a skiff. Her speed was not as rapid as it had been three hours before, but she swung along steadily, alternating the "sailor" stroke with a side stroke and occasionally rolling on her back. Another half hour and she was somewhat tired. Here she had the first and only rest on the whole trip. She placed her arms over the side of the skiff and in that position was rubbed with more oil and alcohol. It was only a five-minute relaxation, but it freshened her up, and she headed for Pekin, as though she had swam only a few minutes instead of four long hours. With Pekin in sight another heavy squall struck the river. She made slow progress with waves piling into her face. Skirting close to the Peoria county side of the river she rounded the turn in front of the draw bridge at 1:04 p. m., where she was taken from the water and rushed over to the boat yards at the foot of Court Street. Here she was taken in hand by Miss Aurelia McEntee, who had accompanied her, rubbed down and dressed, and in half an hour she was as fresh as when she started on the long swim.

Miss Kasjens learned to swim at the age of ten. She is a graduate of the Manual Training High School in Peoria and she is now studying at the Bradley Institute. She was accompanied on the above-mentioned swimming trip by Jacob G. Kasjens, her father; Theodore and Carl Kasjens, her brothers; Miss McEntee, a friend; J. W. Emerson and A. T. Griffith, directors of the Peoria Yacht Club, who acted as timers and judges of the performance.

ABOUT ORDERS FOR BOOKS.

Many "Domestic Engineering" readers have taken advantage of our book department in securing the books they want. We publish a number of technical books for the plumbing and heating trades, and deal in books of this character published by others.

Should you desire any book, no matter on what subject, technical or otherwise, we can get it for you, and in many cases can save you time and trouble.

Some of our readers, however, fail to forward the proper remittance with their orders. This necessitates the exchange of unnecessary letters, as no book orders are filled C. O. D. or with bill for later payment. The terms are invariably cash in advance. If the books should not be found satisfactory, the amount will be promptly refunded upon return of the books in good condition within ten days.

MANHATTAN MASTER PLUMBERS' ANNUAL BALL.

The annual entertainment and ball of the Manhattan Branch Association of Master Plumbers will be held at Lexington Opera House on Wednesday evening, December 10th. The entertainment committee, consisting of I. J. Brown, chairman; Jere L. Murphy, treasurer; Harry Hemlin, secretary; Frank B. Lasette and B. F. Donohoe, is working to make this event the most successful entertainment ever given by this organization.

ILLINOIS STATE PLUMBING AND HEATING CONTRACTS TO BE SEPARATED.

All future state contracts in Illinois will have the plumbing and heating departments separated from the general contracts as a result of a conference between the State Board of Health and representatives of the Illinois State Association of Master Plumbers, held on October 10. The committee representing the master plumbers was composed of John L. Robertson, of Mason City; Bernard Gause, of Jacksonville, and three members of the Peoria local association, Thomas J. Cody, A. J. O'Neill and Thomas F. McQuellan. Members of the Chicago and Peoria local associations will assist materially in the carrying out of this decision by co-operating with the state departments whenever necessary.

THE ANNUAL DINNER OF THE PLUMBING INSPECTORS, OF WASHINGTON, D. C.

Active preparations are being made by Chairman Samuel Tapp, with his able assistants, Wm. B. Woll, Joseph D. Moriarty and Frank Lockread, for the coming annual dinner of the present and ex-employes of the District of Columbia Plumbing Department who are organized as the Association of Plumbing Inspectors of the District of Columbia, and who hold only one annual social meeting. This year's function will be held Monday evening, December 1st, at one of the leading hotels and officials of the Engineer Department of the District Government, as well as all the local master plumbers, the jobbing and manufacturing houses represented in the district, will receive an invitation this year, the same as last year.

MEMBERSHIP OF THE N. A. M. P. INCREASING RAPIDLY.

The Second Supplement to the Fifty-Third Edition of the Directory of the National Association of Master Plumbers has just been issued. This shows a membership of 9,707, an increase of 289 members since last June. The officers of the association expect to start the new year with 10,000 members.

FINANCIAL TROUBLES.

New York, N. Y.—John Frick, a master plumber of 1985 Clinton Avenue, has filed a petition in bankruptcy, scheduling his liabilities at $4,309.

Newton, Mass.—Charles M. Hewitt, a master plumber of this city, has filed a petition in bankruptcy, scheduling his liabilities at $5,409, and his assets at $2,608.

Sea Cliff, N. Y.—James Dwyer, a master plumber of this city, has filed a petition in bankruptcy. He schedules his liabilities at $2,355.70 and his assets at $444.86.

Boston, Mass.—James A. Kent, jr., a master plumber and gasfitter, doing business at 4282 Washington Street, has filed a petition in bankruptcy. He owes $2,331 and has assets of $375 according to the schedule filed with the court.

N. D. Showalter, principal of the State Normal School at Cheney, Wash., will receive bids until December 1st for plumbing, gas fitting, heating, ventilating and electric wiring in the school buildings under construction to replace the buildings destroyed by fire some time ago. Men of the trade from all over the state are expected to submit bids for the work, or a portion of it.

Bridgeport, Conn.—C. S. Eames & Co. will do the plumbing and heating in C. E. Burgess' hotel building on Gold Street.

Bridgeport, Conn.—A. E. Roberts has secured the contract for plumbing Joseph Demka's new three-family house on Orland Street.

Bridgeport, Conn.—Carlson & Benson have secured the contract for the plumbing and heating in Edward Lincoln's new residence at Brooklawn.

Lancaster, Pa.—Evarts & Overdeer, of this city, have secured the contract for the construction of a central heating plant at the State Sanatorium for tuberculosis at Hamburg, Pa.

Harrison, N. Y.—Joseph O'Connor, of Summer Street, in this city, has secured the contract for plumbing and heating in the new two-family house being erected in Purchase Rye.

Brookings, S. D.—Marvin & Son have secured contracts for the installation of heating systems in two residences; one at Bruce and the other at Elkton. Each amounts to approximately $700.

St. Louis, Mo.—Edwards Bros., of this city, have secured the contract for the installation of a heating system in the new addition to St. Joseph's Hospital at Chippewa Falls, Wis.

Lake City, Minn.—E. V. Lombard, of this city, has been awarded the contract for installing the heating and plumbing in the new addition to the school building and also the heating in Mrs. Killeen's residence in this city.

Philadelphia, Pa.—John Borden & Bro. have been awarded the contract for the installation of an atmospheric heating system in the Emanuel Protestant Church at 42nd Street and Grand Avenue. Consideration $2,300.

New York, N. Y.—Kearney Bros., plumbing and heating contractors at 1250 Beach Avenue, have been awarded the contract for plumbing and heating several two-family houses on Leland Avenue. The contract amounts to $3,300.

Pasadena, Cal.—E. O. Nay Co., of this city, has secured the contract for installing up-to-date plumbing in the improvements now being made on John S. Craven's Estate at Orange Grove Boulevard and Madeleine Drive in this city.

Omaha, Neb.—B. Grunwald, of 1214 Douglas Street, has secured the contract for the installation of plumbing and steam heating systems in the new State Capital building now being erected at Salt Lake City, Utah. This contract amounts to $76,000.

New York, N. Y.—The John Richmond Plumbing Contracting Co., of 168th Street and Washington Avenues, has secured the contract for installing plumbing systems in four new apartment houses on Southern Boulevard and 172nd Street. These contracts amount to about $15,000.

Omaha, Neb.—Daugherty & Mortensen, of this city, have secured the contract for the plumbing and heating in the Johnson Apartment building at 38th and Jones Streets. This contract amounts to $8,000. This firm also has a number of smaller apartment house jobs on its hands.

New Business Ventures

Monroe City, Mo.—C. L. Johnson has opened a plumbing establishment in this town.

Newburgh, N. Y.—W. L. Miller has been granted a license to conduct a plumbing business in this town.

Albion, Iowa.—Kumpf & McCray is the style of a new plumbing firm which has just started in business in this town.

New York, N. Y.—O'Brien & Dunkirk, plumbing contractors at Yonkers, have opened a branch establishment at 4626 Richardson Avenue, J. Rosen being manager.

Dillon, S. C.—The Plumbing & Gas Fitting Co. of this city, has been incorporated with a capital stock of $1,500. The incorporators are W. G. Lucas, H. G. Hood and W. J. Adams.

East Port Chester, Conn.—Kinzel Bros. have opened a plumbing establishment at 263 Mill Street. They would like to receive catalogs from manufacturers and jobbers of plumbing goods.

New York, N. Y.—Hubbard & Schlosser have entered the steam and hot-water heating business at 703 Tremont Avenue. They would like to receive catalogs from manufacturers and jobbers of heating goods.

New York, N. Y.—Edward Vock, who conducts a heating contracting business at 4626 Richardson Avenue, has opened a branch establishment at 228th Street and White Plains Avenue. He is at present very busy installing heating systems in the Wakefield section.

Norfolk, Va.—The Virginia-Carolina Heating & Specialty Co. is the name of a new heating specialty concern which has just started in business in 355 Arcade Building in this city. The new company would like to receive catalogs of heating boilers, specialties and pumps.

Business Changes

Presque Isle, Me.—Benno Nadeau, the plumber, has leased a new store where he plans to put in a line of general hardware in connection with his plumbing business.

Columbia, Tenn.—Watkins & Farris have moved their plumbing establishment to new quarters in the Gamble Building at Eighth and Main Street in this city.

York, Neb.—W. J. Chambers, of this city, has just moved his plumbing business into his new building where he will arrange an up-to-date display of plumbing goods.

Bushnell, Ill.—H. W. Warwick, of Memphis, Mo., has purchased Roy L. Hunt's plumbing business in this city. The transfer took place this week. Mr. Hunt intends to settle at Spokane, Wash.

Sanford, Me.—N. J. Prescott has secured larger and more convenient quarters for his plumbing business on School Street, his present store on upper Main street having become inadequate for his growing business.

Frederick, Md.—Charles Keefer and Frank Keefer have purchased J. Burck's interest in the plumbing firm of Burck & Keefer in this city, and the business will in the future be conducted under the name of Keefer Bros.

Convention Dates

January 27, 28 and 29, 1914.—The twenty-second annual convention of the Illinois Master Plumbers' State Association, at Rock Island, Ill. The officers of the association are: President, W. J. Hilliard, Elmhurst; first vice-president, C. D. Brownell, Champaign; second vice-president, John L. Robertson, Mason City; treasurer, O. W. Dawson, Decatur; secretary, W. C. Haviland, Coulter Block, Aurora, Ill.

February 17, 18 and 19, 1914.—The twenty-third annual convention of the Ohio Master Plumbers' State Association, at Cincinnati, with headquarters at the New Gibson House. The officers of the association are: President, F. W. Sponseller, Canton; vice-president, James A. Wood, Toledo; secretary-treasurer, Eb. Ellen, Cleveland.

Obituary

Balthasar Hoffmann.

Balthasar Hoffmann, president of the B. Hoffmann Mfg. Co., of Milwaukee, Wis., died at his home in that city on Friday evening, October 31, according to announcement just issued by the company.

Daniel Lewis.

Daniel Lewis, who for many years conducted a plumbing establishment at the corner of Union and Marshall Streets in Somerville, Mass., died in that city a few days ago.

George M. Lehnen.

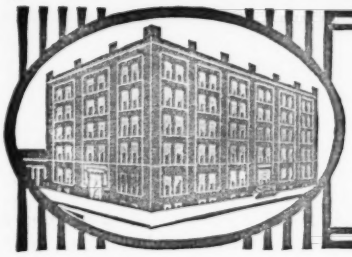
George M. Lehnen, junior member of the plumbing firm of Riefler & Perkins, of 322 South Fifth Street, Springfield, Ill., died at St. John's Hospital in that city, on October 25th, in his 28th year.

John J. Koch.

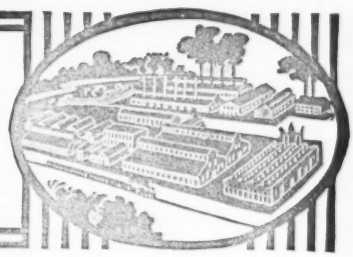
John J. Koch, a member of the South End Brass Appliance Co., of Cleveland, O., died last week at his home in that city in his fifty-second year. He had a host of friends in the plumbing trade in that part of the country.

Edward Larter.

Edward Larter, for the past 35 years active in Toronto, Ontario, in the heating and ventilating business world, having office at 501 Spadina avenue, died suddenly Tuesday, November 11, of heart failure while sitting in his office looking over his correspondence. He had suffered for some time with affection of the heart, but his health had been considered good during the past few months. Deceased had lived in Toronto for the past 40 years and besides his widow is survived by two daughters, Mrs. Paul S. Ainsworth, of Los Angeles, Cal., and Miss Hazel Larter, of Edmonton, Alberta, Can., and by two sons, A. W. Larter, of Toronto, and Norman Larter, of Edmonton.



Among the Wholesalers and Manufacturers



MAKING MANY IMPROVEMENTS AT ITS PLANT.

The Central Brass Mfg. Co. is making extensive improvements and additions to its present plant and offices at 6119-6203 Cedar Ave., Cleveland, O.

WILL MANUFACTURE HEATING SPECIALTIES.

The H. G. Wolff Co., of Chicago, has been incorporated with a capital of $2,000, to manufacture heating specialties. The incorporators are: H. G. Wolff, Carl Neuberger and O. M. Meusel.

NEW MANAGER FOR ST. LOUIS OFFICE OF UTICA HEATER CO.

Utica Heater Company, Utica, N. Y., has pust appointed Walter T. Van Allen as manager of its St. Louis, Mo., branch office. This gentleman until recently served the United States Radiator Corporation in a similar capacity.

WILL MANUFACTURE PLUMBING SPECIALTIES.

The Victor Brass Works, of New York City, has been incorporated with a capital of $15,000 to manufacture plumbing specialties. The incorporators are: Morris J. Junger, E. Volinsky and Samuel J. Joseph, all of 837 Beck Street, New York City.

WILL MANUFACTURE PLUMBING SPECIALTIES.

The Willour Manufacturing Co., of Ashland, O., has been incorporated with a capital of $30,000, to manufacture plumbing specialties. The incorporators are LeRoy Willour, John H. Glasener, Jacob R. Ryder, R. W. McIntosh and Maurice Semsyle, all of Ashland, O.

PITTSBURGH STEAM SUPPLY SALESMEN ELECT OFFICERS.

The Pittsburgh Society of Steam Supply Salesmen held its annual meeting last week and elected the following officers for the ensuing year: President, John F. Robertson; vice-president, C. F. Overly; treasurer, James H. Johnston; and secretary, H. R. Starrett, all of Pittsburgh, Pa.

CHANGES IN THE MANAGEMENT OF THE ACORN BRASS WORKS.

The Acorn Brass Works, of Aurora, Ill., has announced some changes in its management, the most important being the retirement of E. W. Wray as president and general manager, to devote his time to the sales and field work. The new officers of the company are: C. B. Phillips, president; E. W. Wray, vice-president, C. E. Padden, second vice-president; P. Q. Wray, secretary; J. C. Ruth, treasurer and general manager.

THE BEST PIPE, ENGINEERING & SUPPLY CO. ORGANIZED.

George Best, president of the Best Mfg. Co., of Oakmont, Pa., for the past twelve years, has severed his connection with that company, and he and his son, George H. Best, have formed the Best Pipe, Engineering & Supply Co. with headquarters at 3025 Liberty Avenue, Pittsburgh, Pa.

MICHIGAN FOUNDRY & SUPPLY CO. INCREASES CAPITAL STOCK.

The Michigan Foundry & Supply Co., of Canfield and Ellery Streets, Detroit, Mich., has increased its capital stock to $15,000 and has just completed a new addition to its foundry and machine shop. This company is also adding a new line of special fittings to its products, and it is now able to give its customers prompt service.

VICTOR BRASS MFG. CO. BUILDING AN ADDITION.

The Victor Brass Mfg. Co., of Cleveland, O., has started work on a 30x60 foot addition to its present plant at 6800 Wade Avenue, in that city. The new addition will be rushed to a finish at the greatest possible speed, as the increased space is greatly needed. The company has recently equipped its plant with electric power throughout which enables it to get a maximum production from its present plant.

"NACO" SPECIFICATIONS ON EXTRA HEAVY SOIL PIPE AND FITTINGS ADOPTED BY ONE CONCERN.

The Standards Committee of the National Committee of the Confederated Supply Associations, consisting of D. L. Hamill, of Buffalo, New York; Frank D. Keeler, of Rockford, Ill., and John F. Wolff, of Chicago, has after many months of patient work succeeded in making specifications relating to the use of the "Naco" trade mark on extra heavy soil pipe and fittings and the committee has authorized the Central Foundry Co., of 90 West Street, New York City, to use this trade mark on extra heavy soil pipe and fittings. The committee desires that manufacturers of soil pipe and fittings should consider the advantage to the trade generally of the use of the "Naco" mark on their products. Frank S. Hanley, secretary of the Confederated Supply Associations, 261 Broadway, New York, will be glad to correspond with any manufacturer of soil pipe and fittings who may be interested in higher standards on plumbing goods.

OFFICERS FOR THE A. S. H. & V. E. NOMINATED.

The nominating committee of the American Society of Heating and Ventilating Engineers has completed its report covering nominations for officers for the society for the coming year. This report recommends the following candidates for office:

President .....Samuel R. Lewis
Vice-president .....Edmund F. Capron
Vice-president .....Dwight D. Kimball
Treasurer .....Jas. A. Donnelly

Council: Samuel R. Lewis, Edmund F. Capron, Dwight D. Kimball, Jas. A. Donnelly, J. F. Hale, J. R. Allen, W. W. Macon, F. T. Chapman, J. M. Stannard, F. C. McCann, F. I. Cooper and H. M. Hart.

TO CARRY COMPLETE STOCK OF ITS PRODUCTS IN NEW YORK CITY.

Homer Addams, manager of the Kewanee Boiler Co's. branch at 47 West 42nd Street, New York, has just announced that this company hereafter will carry a large quantity of Kewanee garbage burners and water heaters, from 100 to 2,000 gallons capacity, in its own storage yard at 141st Street and Locust Avenue, the Bronx, for emergency and regular needs, and that repair parts for fire box boilers, garbage burners and water heaters can be secured instantly from complete stock in the company's warehouse just established at 584 East 133rd Street, New York.

NOVEMBER MEETING OF ILLINOIS CHAPTER A. S. H. & V. E.

Members Debate on Merits of Downward vs. Upward Ventilation.—Secretary Bronaugh Honored.

The esteem in which Secretary W. L. Bronaugh of the Illinois Chapter of the American Society of Heating and Ventilating Engineers is held by his associates was amply expressed in the gift made to him at the regular meeting last Monday evening, November 10th, when he was presented with a silver drinking set, consisting of a large thermos pitcher, six cups and a beautfully engraved tray inscribed as follows: "To W. L. Bronaugh. In Appreciation. Illinois Chapter A. S. H. & V. E."

The presentation was made by J. P. Dugger, who with Samuel R. Lewis composed the committee. Mr. Bronaugh made a well worded reply and showed by his language the appreciation that he felt.

Thirty-one members were present at the dinner which was at this time held in the Fraternity Room of the Great Northern Hotel. After the dinner the regular program was begun. Announcement was made that the programs for the year would soon be distributed. The annual dues have been changed from $10.00 to $5.00, as decided by mail ballot of the members.

A communication from the Chicago Ventilating Commission asked that the present delegates to that body, Messrs. Hart, Lewis and Davis, be continued in that capacity.

A letter forwarded by the Board of Governors to Dr. Geo. B. Young, Health Commissioner of Chicago, commending his efforts in support of the ventilation ordinance and stating the society's position in the matter, was read.

There will shortly be issued in printed form, a report of the work done by the Ventilation Commission, in which the members are much interested.

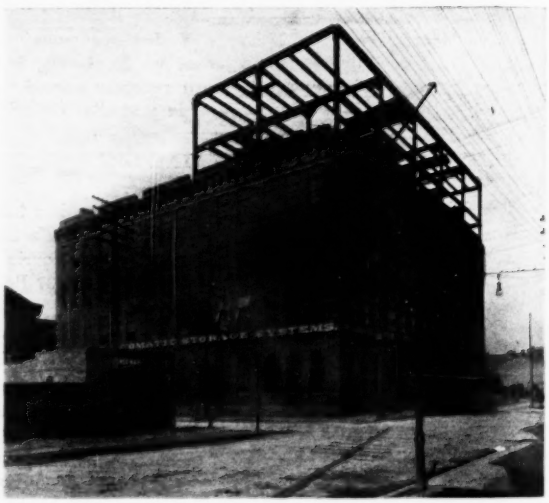
A debate in which all the members took part, on the subject "Downward vs. Upward Ventilation" was the interesting feature of the evening's meeting. S. R. Lewis was the leader of the "Upward" side and E. L. Hogan filled that office for the "Downwards." The balance of the members were divided equally on each side and it was an interesting incident to find many of those who ordinarily championed one method on the side of the opponents of that method.

The debate was productive of a great deal of good and the educational value was well worth the effort. No decision was made, as the purpose was not to decide the merits so much as to bring forth various points in the argument.

The December meeting will have as subject for a debate, "Forced Circulation of Hot Water vs. Vacuum Steam Heating."

WORK ON THE NEW RUUD PLANT PROGRESSING RAPIDLY.

Some time ago we mentioned in this column that the Ruud Manufacturing Company, of Pittsburgh, Pa., contemplated increasing operations which involved a new plant in Toronto and an addition to the Pittsburgh build-



New Addition to Plant of Ruud Manufacturing Co., Pittsburgh.

ing. The former, we understand, is completed and working to capacity. The latter, as shown by accompanying illustration, is under way and every effort is being made to have the work completed by January 1st. The Ruud company further announces that while they have been somewhat handicapped during the past few months, owing to the extraordinary demand for Ruud positive-action double fuel control heaters, the enlarged facilities will permit of fifty per cent increased production and the trade will be accorded the first degree of prompt, efficient service.

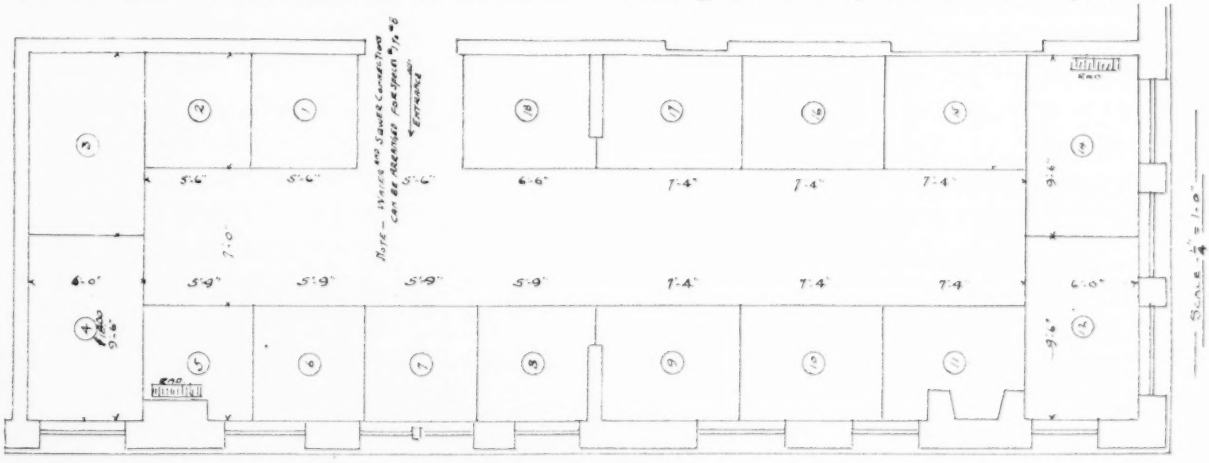
TRANE CO. TO PUBLISH A HOUSE ORGAN.

The Trane Co., with main offices at La Crosse, Wis., and branch office at 839 Dearborn Street, Chicago, will issue a monthly house organ, which will be called the "Vapor Heating Monthly." The first issue will be pub-

lished in February, 1914. It will be the aim of this magazine to promote the interest of vapor heating and to take up items of vital interest to dealers, to the end that vapor heating may become as well known as other methods of heating. The increase in the business of the Trane Company during the last year, and the enthusiasm which dealers show who have taken up this system, makes this company believe that a magazine of this kind will not only be a great benefit to its readers, but it will be an efficient means for keeping up the increase in business. The mailing list is now being prepared, and those who desire to get the magazine are requested to apply for it at once.

ILLINOIS MASTER PLUMBERS ARRANGE FOR EXHIBITION.

The success of the exhibit hall at the convention of the Illinois master plumbers at Springfield last year has led the officers to arrange for a space near their convention hall for the annual convention at Rock Island, January 27, 28, and 29, 1914. The floor plan herewith shows that there are eighteen spaces available and the association



Floor Plan of Exhibition Hall for Illinois State Convention, Rock Island, Ill., Jan. 27, 28 and 29.

expects to have all the space taken by manufacturers of lines that will interest the members. The hall will be well lighted and provision made for water supply and electric current, so that a first class exhibition will be held. Secretary W. C. Haviland of Aurora, Ill., who has been looking after the arrangements, is enthusiastic over the good of such an exhibition hall in enlarging the attendance at the convention.

J. S. Nichols, president of Riverside Boiler Works, Boston, Mass., is receiving congratulations on his recent marriage.

J. F. Esperon, formerly Pittsburgh representative for the Richmond Radiator Co., has recently accepted a position with the Richardson & Boynton Co., with headquarters at Chicago.

W. S. Newkirk, secretary of the Niagara Radiator Co., of New York City, is now a grandfather. Wonders will never cease. Particularly is this true when one realizes that "Billy" always looks like a "bride-groom" himself.

Charles Keplinger, secretary of the Jos. F. Grosswiller Co., of Toledo, O., is a happy grandfather. His daughter, Mrs. Harry S. Robinson, is the proud mother of a bright little girl, and Grandpa Keplinger says it is the "cutest-sweetest, etc., etc.———"

E. H. Hammann, second vice-president of the J. L. Mott Iron Works, is making a tour of the middle west and was a Chicago visitor this week. He is optimistic over the conditions in the trade despite adverse business conditions in many localities.

H. F. Ashmun, better known as "The Handy Man," traveling representative for The Handy Manufacturing Co., of Bridgeport, Conn., was encountered in Pittsburgh last week where he had been taking orders for his new Becker receding pipe threader. He is en route to Bridgeport and expected to be in that town within the next ten days.

W. L. Mays, who went to East Liverpool, O., from Wheeling, W. Va., to operate the East Liverpool Sanitary Pottery Co's. plant, has resigned his position, and will return to Wheeling. His successor has not been announced.

Ward Hillman, of the Richardson & Boynton Co., was seen fighting his way through a Cleveland snow storm last week in true deep-seaman fashion. Ward knows a lot about navigation as well as the heating business and talks in the language of the mariners in a very free and easy fashion.

J. C. Whitlam, of the J. C. Whitlam Co., Wadsworth, O., has always been noted for his genial disposition and yard-wide smile for everyone. But since Monday morning, November 3rd, the J. C. smile has gone clear beyond the thirty-six inch mark. It was a nine-pound boy and he grows more like his dad every day.

Alfred F. Howe, general sales manager for The Borden Co. of Warren, O., left that city this week for a three weeks' trip among the jobbers of Alabama, Georgia and Florida. A. F. believes in easy working as applied to die stocks only and gets so full of the spirit of the "Beaver" that he just has to leave his offices and get out on the job occasionally.

Jas. W. Barber, representative for the Ruud Manufacturing Co., of Pittsburgh, Pa., in western Pennsylvania

and eastern Ohio, was encountered in Erie, Pa., last week while circulating among the trade. Jim is one of the popular boys, having been identified with the heater business for a number of years and talks in the language of thermostatics with perfect ease.

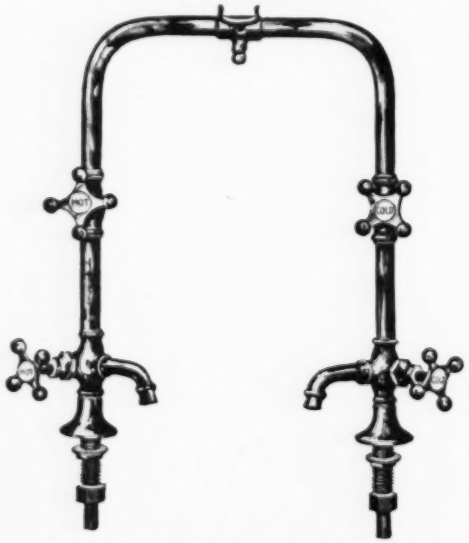
Fred W. Smith, formerly vice-president and general manager of the Shirley Radiator and Foundry Co., of Indianapolis, Ind., has recently accepted a position with the Steel and Radiation, Ltd., of Toronto, Canada, as general manager. Mr. Smith has given up his right to boost for the Bull Moose party as he has moved his family to Toronto and prepared to stay there.

Vic Mahler, assistant manager of sales for the Central Brass Mfg. Co., of Cleveland, O., spent a few days in Chicago this week on this way west. He is merely out looking the field over and really isn't after orders, but as writing orders is a sort of second nature with Vic, he carries a real order book in his pocket and can be induced to accept orders from his close friends.

Ted Moran, vice-president of the Victor Brass Mfg. Co., of Cleveland, O., has been spending the past few days at the factory and on Monday made a start for his eastern field. He expects to stop at Pittsburgh for a few days and then "bate it for the aste, begorry." Ted's jolly disposition and inexhaustible supply of tingling wit has made him a most welcome visitor among the eastern plumbers for many years.

THE "S. & K." SPECIAL COMPRESSION SHAMPOO FIXTURE.

The accompanying illustration will give the reader a clear idea of the attractive appearance of the "S. & K." special compression shampoo fixture, manufactured by the Street & Kent Mfg. Co., of 549 Fulton Street, Chicago. It is described as a high-grade fixture, and it is furnished



The "S. & K." Special Compression Shampoo Fixture.

complete with hose and sprinkler by the manufacturer, who will be glad to send interested parties complete information upon request, mentioning "Domestic Engineering."

Architects Jones & Furbringer, at Memphis, Tenn., are asking for bids for the steam heating, plumbing, etc., for the Children's Hospital Building in that city.

THE "GEYSER" TANK HEATER.

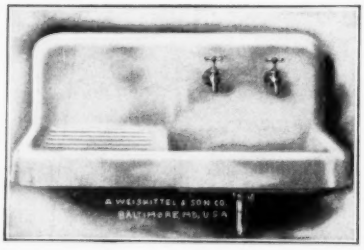
The "Geyser" tank heater shown herewith is a surprisingly powerful and efficient heater with a unique construction, its division plate being cast in the body with the connections at the rear on either side. This causes the water to travel completely around the fire pot. The inner corrugated surface makes the fire pot exceedingly sensitive to heat and produces an extremely rapid circulation. The top with two large covers forms an opening large enough for a wash-boiler and makes this tank heater particularly desirable for laundry purposes. It has a capacity of 60 gallons and it is manufactured by the Thatcher Furnace Co., of 110-116 Beekman Street, New York City, who will be glad to send interested parties complete information upon application, mentining "Domestic Engineering."

"KEWANEE" UNIONS.

The National Tube Co., with general offices at the Frick Building, Pittsburgh, Pa., has just issued a four-page circular illustrating and describing the regular Octagon pattern as well as the Round End, Hexagon and M. & F. patterns of the air-tested union with no inserted parts. The subject is presented in the form of an interview, on the question and answer basis, and both in regard to logic and typography it is exceedingly well presented. Readers of "Domestic Engineering" can obtain copies of this circular upon request at all offices of the National Tube Co., and from "Kewanee" Union jobbers.

A NEW WEISKITTEL PORCELAIN ENAMELED SINK.

A. Weiskittel & Son Co., of Baltimore, Md., has just placed on the market a new one-piece white porcelain



A New Weiskittel One-Piece Porcelain Enameled Sink.

enameled sink combination, 20 inches wide and 40 inches long over-all, as shown in the accompanying illustration. This combination is made with drainboard on either right or left hand side, and it is made to meet the demand for a complete one-piece sink combination for small kitchens and pantries. The sink is well-proportioned and the manufacturers are of the opinion that it answers every purpose of the larger size sinks. A substantial wall-hanger

is furnished with this sink, but it can also be furnished with painted or enameled legs, if desired. Master plumbers wishing to display a sample of these sinks in their show room can obtain full particulars from their jobbers or from the manufacturers upon application, mentioning "Domestic Engineering."

Hesitation in the Iron Market.

Consumers of pig iron purchased approximately 40,000 tons of iron during the week, all of it being in small lots and taken for actual needs. Continued recessions are being made in the price of steel making iron and basic has sold as low as $13.25 at furnaces in the valley. The prediction is freely made that sales will be made at $13 before long. Foundry iron, on the contrary, seems to be well maintained and there has been no changes in quotation since last week. The brightest spot in the steel situation is the subways to be built for New York and bids will be received this year for contracts which will take at least 50,000 tons of structural material. If some of the late contracts that are now expected to be put out are made, there will be nearer 100,000 tons of material disposed of. Rail orders have amounted to about 25,000 tons, and there are orders in the locomotive shops for about 60 engines. The report of the American Railway Association shows the shortage of idle cars had been cut down in the fortnight ending No. 1, and surprised no one. It is improbable that there will be any other shortage of cars for a year at least. Quotations are as follows:

No. 1 Northern foundry, New York	$16.00 to $16.25
No. 2 Northern foundry, New York	15.50 to 15.75
No. 2 Southern foundry, Cincinnati	14.50 to 15.00
No. 2 Northern foundry, Cincinnati	15.25 to 15.75
No. 2 Northern foundry, Chicago	15.00 to 15.50
No. 2 Southern foundry, Birmingham	11.25 to 11.50

Lower Prices for Copper.

The statement of the Copper Producers' Association published last week showed that there was a slight gain of stock. It has been expected that the increase of supply would be more, but in any event the trade construes these figures as reflecting past conditions and it is pointed out that consumption has not been nearly as active in November as it was in October. Reports from abroad indicate that consumers there have little faith in prevailing prices, and copper in London declined an equivalent of three-quarters of a cent a pound in New York. The market in New York is very narrow, but business could probably be done at 15.50 cents. At the same time there has been no cutting in the price of finished material.

Tin.

A further reduction in the price of tin carried the figure down to 39.50 cents. Stocks are accumulating in the United States and deliveries in this country promise to be large for the next two or three months. Relatively little metal has reached New York, so far this month, but some large cargoes are on the way. Consumption is not as large, but it is anticipated that stocks will accumulate for the next two or three months.

Lead.

The market is steady and without change at 4.35 cents New York and 4.20 cents St. Louis.

Spelter.

Sales of spelter were made in New York at 5.35 cents and at St. Louis at 5.20 cents.

Old Metals.

There is not much to say about the old metal market the past week, but that much is compressed into a nutshell, namely, complete demoralization and melting away of prices, as ice in a sudden heat, says "The American Metal Market." It is many years since we have witnessed the like, not since 1907. The largest operators have practically ceased buying. Whereas the previous advances in copper affected the scrap metal market slowly and every bit of advance had to be extorted as it were from the consumer, the reverse unfortunately has occurred, the advance was slow, the drop precipitous. Prices made one or two days ago, seem too dear. All is in a jumble and at present writing, no one knows when the market will come to a settlement. There is much mystery about the producers' selling prices, and their holding up price. All around them prices are cut. The causes for this, are the general backward condition of all industries, not only in iron, steel and metals, but all other trades and industries are feeling this pessimistic condition. Then the money agitation, which is still unsettled and dragging its weary course along. The Mexican question may also be a factor. All in all, whatever it is, things look gloomy. Take the aluminum industry, has there ever been a time since its infancy, when this trade was as paralyzed as it is now?

The export trade has dropped off to a great extent.

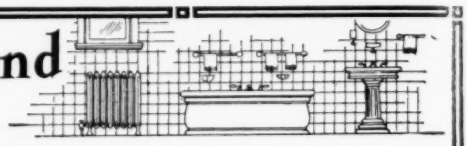
In white metals, the only live articles are the tin, pewter and solder scraps. The type scraps and drosses are stagnant. Even zinc scrap, which has hitherto been eagerly picked up, is dragging and dropping. This pen picture of the metal trade is a gloomy one but the colors are not put on any more sombre than the situation warrants.

New York dealers' buying prices are:

Light copper	$11.50 to $12.00
Strictly crucible copper	13.25 to 13.50
Uncrucibled copper wire	12.75 to 13.00
Uncrucibled heavy copper	12.75 to 13.00
No. 1 machine composition	11.00 to 11.25
No. 1 composition turnings	9.50 to 10.00
New brass clippings	9.00 to 9.25
No. 1 brass turnings	7.50 to 8.00
Cocks and faucets	9.75 to 10.25
Light brass	7.25 to 7.50
Heavy yellow brass	7.75 to 8.00
Heavy lead	3.75 to 3.87½
Tea lead	3.50 to 3.60
Scrap zinc	3.85 to 4.00
No. 1 pewter	26.00 to 27.00
Close cut solder joints	7.50 to 8.00

Norfolk, Neb.—During the recent baseball contest between New York and Philadelphia, the following appeared in the Norfolk Daily News: "A Norfolk man and Christie Mathewson used to play football together. Both are now on the road to wealth, Mathewson is a baseball pitcher and the Norfolk man is a plumber." This refers to B. O. Daubert, a well known master plumber of this city, who attended Bushnell College some years ago. Mr. Daubert conducts a most successful business and has at the present time fifteen men in his employ. At a recent carnival in this city he won second prize for his float.

Among the Plumbing and Heating Contractors



Illinois

Chicago.

The Sanitary bureau of the Chicago department of health has recently sent out a bulletin of warning which starts off—"Don't hibernate. Ventilate!" The warning points to figures which show the first ten months of 1913 saw an alarming increase in deaths due to pneumonia, influenza and tuberculosis, and adds: "These figures show that people continue to be indifferent to the kind of air they get, and that hibernation, rather than ventilation, is still popular among a large number of our citizens."

G. H. Schey, 5536 South Ashland Avenue, has recently secured the contract for plumbing two residences to be erected at 6638-40 Wabash Avenue. The owner is W. G. Bartruff, 7044 Yale Avenue.

M. Colren, who conducts a plumbing shop at 1946 Division Street, will do the plumbing work on two flats soon to be built at 1108-10 California Avenue.

The plumbing installation on a two-flat building at 4954 Saint Anthony Court will be put in by Otto Liss, of 3528 North Robey Street.

D. Glustoff, 2515 Division Street, has been awarded the contract for plumbing work on a three-flat building to be built at 2117 North Kendal Street.

The plumbing contract for a six-flat building to be erected at 4430-2 Malden Avenue has recently been awarded to P. Jacoby, of 4332 Albany Avenue.

J. J. Fagan, 3815 Chicago Avenue, has recently secured the plumbing contract on a two-flat building to be constructed at 741 N. Lotus Avenue.

Creed & Son, 25 West Lake Street, have recently obtained the contract for installing the heating equipment in a three-flat building to be erected at 4929 Iowa Avenue.

The heating system in a six-flat building to be erected at 4430 Malden Avenue will be installed by the Humboldt Heating Co., 1414 North Maplewood Avenue.

The Fullerton Plumbing Co., 1409 Fullerton Avenue, has recently obtained the contract for installing plumbing in the following buildings: Store, office and flat building at 2327 Clifton Avenue and three flats at 2126 Clifton Avenue.

I. Miller, 1012 South Halsted Street, will install the plumbing on a six-flat building soon to be erected at California Avenue, near 13th Street.

Fred Seip, 3057 East 92nd Street, has recently been awarded the plumbing contract on a store and flat building to be erected at 900 Ewing Avenue.

The plumbing installation on a large apartment building to be erected at Montrose Avenue and Lincoln Street has been awarded to E. C. Benning of 1124 Belmont Avenue.

L. W. Hudon, of 2638 West 38th Street, has recently obtained the contract for plumbing installation on a six-flat building to be erected at 4829 West End Avenue.

Riordan Bros., 3523 Ogden Avenue, will install the plumbing in a two-flat house to be built at 3133 South Crawford Avenue.

George Boynton has removed his plumbing shop from 1736 Greenleaf Avenue in Rogers Park to 1758 Greenleaf Avenue in the rear of the Rogers Park National Bank Bldg.

Geo. A. Henrich, 5536 Broadway, has the heating of the E. S. Wise store building at the southwest corner of Greenleaf Avenue and Clark Street.

Michigan

Detroit.

With building in Detroit, breaking all records, while in other cities the financial stringency has resulted in a slackening of work, contractors in all lines from other cities have written or visited the Builders and Traders Exchange in Detroit during the past thirty days with a view to locating here. Most of the work in this city for the past few months has been apartment buildings and residences.

A fourteen-story office structure is to be erected on the site adjoining the new Board of Commerce on Lafayette Avenue, by the Gray Estate; the land has a frontage of 50 feet and a depth of 130 feet.

The Evening News Association, publishers of the Detroit News and the News-Tribune, announce that they will build a new plant at the corner of Second and Fort Streets, to cost in the neighborhood of $200,000. It will be devoted exclusively to publishing purposes and will be modern in every respect. The present plant is located at Shelby and Larned Streets. Plans are now being prepared by a number of leading Detroit architects. George Booth and William E. Scripps comprise the Evening News Association.

The Board of Commerce has organized a Ways and Means committee, which is divided into sub-committees, each one representative of a certain line of industry. On the plumbing, heating boilers committee are E. A. Morris, chairman; James M. Walker and W. S. Valkenburg. Should anything arise of importance at any time pertaining to these industries, it would first be referred to this committee, which in turn would take the matter up with the executive committee of the organization.

The heating system in the six-family apartment building in course of construction at Forest and Commonwealth Avenues will be installed by the Pittelkow Heating Co.

Otto Wurm & Co. continue to enjoy a prosperous fall business, in fact the best they have ever had. Among some of the recent contracts awarded them are the plumbing in the warehouse of the H. R. Leonard Furniture Co., at 14 East Columbia Street, which concern, by the way, will erect a big building on Woodward Avenue, starting the first of next April, the Woodward Avenue building being for retail purposes and the Columbia Street building for use as a warehouse. Also for the plumbing in the power plant being erected by the Detroit Oak Belting Co.

Architect A. E. Harley is preparing the plans for a

duplex brick residence to be erected on Second Avenue, near Colburn Avenue. Bids close November 20.

To aid in the movement of early closing of the retail stores on Saturday nights, the leading manufacturers are being asked to change the pay days from Saturday to Monday or some mid-week day. Commenting on this matter, James S. Walker of the Walker Manufacturing & Supply Company, jobbers in plumbers supplies, said: "Ever since I have been in the business—nine years—this company has paid on Monday, in accordance with a plan inaugurated a quarter of a century ago by my grandfather. Our men find it very satisfactory. Having little chance or inclination to squander their wages, they are steadier and more prosperous than if they received pay envelopes on Saturday."

Kinney Bros., 1174 Michigan Avenue, have the contract for plumbing and steam heating in the store and apartment building at Fort and Rivard Streets.

Donald Miller will install the steam heating and plumbing in the Central Station Steam Co's. new building on Joseph Campau Avenue.

George H. Soffel Co. has opened permanent offices at 623 Dime Bank Building and will specialize in contracts for plumbing and drainage. This concern installed the entire plumbing system in the Dime Bank Building, the largest office structure in Detroit. It also landed the plumbing contract in the new Palace Theatre.

Port Huron.

Moor Bros. have had a very successful year in their heating department doing about 100 per cent more than last year. They have several contracts on hand to be completed by the first of the year.

Hugh Bonner has been awarded the contract for plumbing and heating Julius Baker's residence at Atkins, Mich. The contract amounts to $1,800. He has on hand twenty contracts for plumbing and eight heating contracts. Mr. Bonner says while his business this year has increased about 150 per cent the outlook for next year is better.

James B. Taft, formerly foreman with the Wm. Gibson Co., of Port Huron, has opened a shop at 931 Griswold Street, and will be pleased to receive catalogs. Mr. Taft has several good contracts now under way.

James Abernethy is doing the plumbing and heating in James Campbell's residence on Union Street. He expects to complete the plumbing in Port Huron post office about Nov. 30.

Monroe.

National Plumbing & Heating Co. is doing the heating in the Acker Building on Front Street.

Wyandotte.

Wyandotte Sheet Metal Works has been awarded the plumbing contract for the new building of the American Chemical Co. This company just completed the heating works in Koller Building.

Flint.

Edwin Sterner Co. has secured the contract for plumbing, heating and electrical work at the Homedale School and the heating in the Parkland School.

The interest of Geo. N. Larkin of the firm of Larkin & Miller, was purchased by Joe Miller, and the business will hereafter be known as the Joe Miller Plumbing & Heating Co. This company has just completed the steam heating in Watson's Wholesale Cigar Co's. building on West First Street and it has several good contracts on hand.

Plans are out for bids on the new Y. M. C. A. building. It is expected that ground will be broken about April 1st. A new grammar school is contemplated, and more sanitary sewers for next year.

Michigan School for the Deaf will be rebuilt at a cost of $162,000. Shield and Leadly, of Lansing, Mich., will do the plumbing.

Mt. Clemens.

Four nice plumbing and heating contracts were let this week to Hatzenbuhler & Cudworth: Rev. Chas. Koenig's residence at New Baltimore; Rev. John O'Shea's residence at Grosse Point; Fisher's residence on Hubbard and Market Streets, and the plumbing in the Clementine Hotel.

Chas. S. Ferrin Co. will install a complete electric light plant, plumbing and heating in Walter Steffins' residence at Fraser, Mich. The contract price is $3,000.

E. J. Burke will install a pneumatic system for hard and soft water, and a complete bathroom, in August Blanck's residence on Cass Avenue.

Ohio

Columbus.

Plans for a heating, plumbing and electrical work for the assembling plant of the Ford Motor Company to be located at Cleveland Avenue and Buckingham Street, Columbus, Ohio, are being prepared and will be advertised for soon. The general contract for the erection of the building has been awarded and work has started.

Architects Richards, McCarty & Bulford are making plans for extensive remodeling to the St. Joseph's Cathedral. The changes will include a new heating system as well as a lighting system.

A movement is on among business men's organizations and societies of architects to have the Ohio Industrial Commission take over the supervision of all public buildings. The Ohio Industrial Commission was created recently to replace seven departments of the state government. In case the law creating the commission does not provide for the control of public buildings by the commission a law will be presented to the legislature to bring this about. This will include the supervision of all state plumbing.

Coshocton.

The Ohio State Board of Health will not permit the dumping of sewage in the Muskingum river unless a sewage treatment plant be erected. The proposition of the State Board to permit the municipal authorities to empty the southside sewage in the river was received by the city council of Coshocton and steps were taken to have plans prepared for a sewage system.

Barberton.

The officials of the Selzer Heating Co., of Barberton, will soon start the work of constructing a large addition to the plant. The burned portion of the plant will also be rebuilt.

Xenia.

City Solicitor H. D. Smith, representing the mayor and city council will appear before the state board of health at its regular meeting December 9 for a conference in regard to the condition of the city sewage plant. Xenia has failed to erect a new plant in compliance with the state board and will now have to take some steps in this direction.

Pennsylvania

Pittsburgh and Vicinity.

The H. E. Kennedy Co., which has the plans for the new theatre to be built on the North Side for R. H. Boggs, has had bids submitted for the plumbing, steam fitting and wiring. The successful bidders will be announced shortly.

The steam heating for the new $100,000 Parochial school being built in Johnstown, Pa., has been awarded to the Johnstown Supply Co., of that city.

Architect W. J. East, of Beaver, Pa., has specifications ready for the plumbing and steam heating systems to be installed in the new First National Bank Building, at Aliquippa, Pa.

The Dormont Plumbing Co., of Pittsburgh, has closed three good sized contracts during the last fortnight, which will keep the company busy for some time to come. J. E. Fulton and R. E. Seibel, who are erecting an $8,000 picture theatre, awarded this company the plumbing. Brown Bros., who are erecting a $6,000 apartment house, also gave the plumbing to the Dormont concern. The electric wiring in the new $6,000 residence being erected by Lewis Sarkas, will also be done by this concern.

The Pennsylvania Railroad Co., which is erecting an $18,000 passenger station at Brookville, Pa., gave the plumbing to H. M. Milford, of that place.

W. H. Gulland, of Clarion, Pa., will do the plumbing in the new parsonage of the First Presbyterian church being built in that city.

Mrs. Catherine Sullivan awarded the plumbing work in her $7,000 store and apartment building to R. Busse, of this city.

Marks & Kessler have secured the contract for plumbing in the $12,000 moving picture theatre, being built by M. Smolevitz.

The Denny Estate, which is building a $6,000 shop and office building, has awarded the plumbing work to the S. S. White Co.

W. L. Brewer, of Rochester, Pa., secured the plumbing in the store building being erected at that place by Frank Workman, a hotel owner.

Both the plumbing and electric wiring contracts were secured by the Johnstown Heating & Plumbing Co., of Johnstown, Pa., from the Conemaugh United Brethren church in that city.

Frank Reeder, Jr., has been elected treasurer of the Bangor Steam Heating Co., which has just been formed at Easton, Pa., under a Pennsylvania charter. The capital stock is placed at $5,000. The directors of this company are: H. M. Ackerman, C. B. Brunner and Frank Reeder, Jr., all of Easton, Pa.

Kirkendall & Brownson, of Berwick, Pa., have just completed the plumbing in the new Shickshinny high school building and the installation of a heating system in the remodeled Lyric Theatre of Berwick. They are at present installing plumbing, hot water heat and acetylene gas in the Beach Haven Hotel, and a steam plant in the new double store and dwelling of J. Mittlemen, in West Berwick. The firm of Kirkendall & Brownson has been in business in Berwick for five years and at present enjoy a prosperous business, which they claim came through careful work and by the use of the best materials. H. J. Kirkendall is a member of the Pennsylvania State Association's Sanitary Committee.

Massachusetts

Clinton.—The contract for plumbing and heating in the new Union railroad station here has been awarded to the Dobson Plumbing and Heating Co., of Lawrence. The amount of the contract is about $5,000 of which about $3,000 is for plumbing and $2,000 for heating.

Leominister.—George B. Long, the contractor for the new town hall building, has sublet the plumbing, heating and ventilating contract to the Jennison Plumbing Co., of Fitchburg.

Lowell.—Welch Bros. has been awarded the contract for making changes in the heating plants at the Bartlett and Butler schools.

Westfield.—The Wyckoff & Lloyd Co., Springfield, was the lowest bidder for the heating in the Abner Gibbs school to be erected on West Silver Street. The company's bid was $7,505. Other bidders and their figures were: J. J. Cotter Co., Springfield, $7,870; Pierce & Cox Co., Boston, $7,897; George H. McLean, Springfield, $7,950; Holyoke Supply Co., $8,078; J. J. Hurley & Co., Boston $8,130; Milner-Bill Co., Springfield, $8,195; A. B. Franklin, Boston, $8,200; Rourke Bros. Co., New Haven, Conn., $8,229; Libby & Blinn, Hartford, Conn., $8,379; Holyoke Valve and Hydrant Co., $8,564; Ingalls & Kendricken, Boston, $8,684; Moseley & Machin, $9,448. Three bids were received for plumbing but the contract was not placed, the plumbing being included in the general contract awarded to the Casper Ranger Construction Co., of Holyoke for $65,959. The plumbing bids received were as follows: J. J. Cotter & Co., Springfield, $5,392; Moseley & Maschin, $5,632; Wyckoff & Lloyd Co., of Springfield, $6,333.

Missouri

Kansas City.

From all appearances, the forthcoming third annual ball, given by the Association of Master plumbers of Kansas City, Mo., assisted by the Women's Auxiliary, promises to be the most successful ever held. Assembly Hall, at Thirty-first and Troost Streets, has one of the finest dancing floors in the city, and the advance sale of tickets has been unusually brisk. A fine time is expected, which is fully justified by the fact that the same committee who so successfully conducted the ball last year is in charge again, and everything promises a most enjoyable event on Monday evening, November 24th.

The public sanitary drinking fountain which was erected by the Women's Auxiliary to the Association of Master Plumbers, in Kansas City at the corner of Twelfth and Grand Avenues, last April, is already proving itself a power for good. Through its influence another Murdock fountain has recently been installed at the corner of Eighth and Grand Avenues, near the government building, by a woman who prefers to be an unknown public benefactor.

Kansas City Master Plumbers' Hallowe'en Party.

One of the most enjoyable events which has occured this fall among the members of the Association of Master Plumbers in Kansas City, Mo., was a Hallowe'en party given by Walter Hanson, president of the association, assisted by his sisters, Miss Leona Hanson and Mrs. Lee Smith, on Friday evening, October 31st. The pleasant

family home, at 3817 East Eleventh Street, was very tastefully decorated in regular sylvan fashion with autumn leaves and berries, together with other appropriate emblems of the Hallowe'en season. The evening was pleasantly spent in card playing by the numerous guests present, after which a bountiful repast was served. Flowers and autumn fruits were in profusion, the genial host and hostesses vieing with one another in their tireless efforts for the pleasure and comfort of their guests. At a late hour the company dispersed, with mutual expressions of good will.

Wisconsin

A Progressive Wisconsin Plumber.

The little city of Marshfield, Wis., is not at all backward in its plumbing establishments; one of the most prosperous is that of Alex Mettelka. Our illustration shows a shipment of plumbing goods just received by

Alex Mettelka's Plumbing Establishment at Marshfield, Wis.

him and ready for delivery on the jobs. Mr. Mettelka bought out his brother about two years ago and has been particularly successful as a business man and as a financier. He appears in the center of the picture with his two small sons at the right.

Tennessee

The Ahrens & Ott Mfg. Co., of Nashville, Tenn., is inviting people to visit its handsome $10,000 show room at Cummins Station, Nashville.

H. B. Jordan, in East Nashville, reports that the autumn business is holding up fairly well. He has several city and suburban contracts on hand.

J. S. Moore, on Bridge Avenue, Nashville, Tenn., who came here from Houston, Tex., has enjoyed a good year, notwithstanding the season has been a little off locally.

David Grewar Co., corner of Third Avenue, North, and Church Street, North, Nashville, has one of the prettiest display rooms in the South. The company looks forward to a good winter season.

Jno. Bouchard & Sons, of Nashville, Tenn., are installing several large heating systems about town.

The T. J. Mooney Co., of Nashville, has the contract for the plumbing work on the Galloway Memorial Hospital.

Washington

Seattle.

Local plumbing and heating contractors are looking forward with much interest to the awarding of the contracts for the plumbing and heating installations in the Administration building, the plumbing and heating in the Tuberculosis hospital and the plumbing and heating in the power house for this hospital. Bids for heating and plumbing the Tuberculosis Hospital were received until November 1st, but the awards have not been made public up to this time. The work entails the expenditure of thousands of dollars and practically every master plumber doing business in Seattle has submitted bids for the work.

Another large contract which attracts the attention of local men is the work to be done in a school building, District No. 51. The work includes plumbing, heating and ventilating. Frank Steil, 752 North 89th Street, is clerk of the district and is receiving the bids. V. W. Voorhees, architect, Eitel building, prepared the plans and specifications.

During the past few weeks several large contracts of more than ordinary importance have been awarded, insuring plenty of work for the fortunate bidders. The contract for the installation of plumbing fixtures in the Central Waterway Wharf, recently completed by the City of Seattle, was awarded by the Port Commission to Wm. B. Mullen, 3615 Phinne Avenue, on his bid of $1,817. The Port Commission at the same meeting awarded the contract for lighting and plumbing installations in the Salmon Bay wharf to McKay Navarre Co., Prefontaine Building, on its bid of $1,017.

California

San Francisco.

In the local trade, the month of October was not up to expectations. The quiet condition of general building operations is shown in the record of permits issued, by which the valuation of new work is placed at $1,118,280, compared with $2,273,723 for the previous month. The record was, in fact, the lowest since last December. A number of large buildings on which contracts were expected have been held up for one cause or another, and very few notable plumbing or heating jobs have been placed. The situation is also less active than it has been at Los Angeles, though there seems to be more going on there than here. In Oakland there is no great amount of work under way, but small jobs are fairly numerous. Of the interior towns, Sacramento has made surprising progress this year, and has most favorable prospects for the future, owing to the steady growth of the fruit and other agricultural industries in northern California.

William Wade has taken a $2,500 plumbing contract for a 3-story building at California Street and Elleck Lane, and also a contract amounting to $15,871 for plumbing in an 8-story hotel on Sutter Street, west of Powell.

The Turner Co. has taken the wiring contract for a 2-story theatre building on Broadway, near Grant Avenue.

M. J. Orr, of the Orr & Graves Plumbing Co., of Sioux City, Iowa, was indicted by the federal grand jury on Nov. 6, but was immediately released on bail. An alleged conspiracy in restraint of trade is charged, trial being set for the May term of court.

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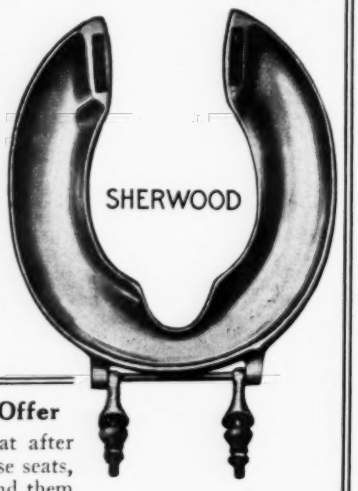

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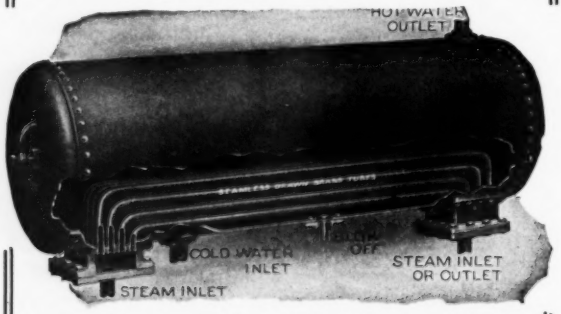

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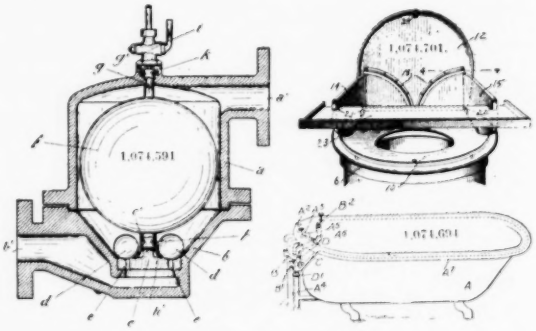
Patents

Heating Department.

1,074,591. Automatic Draining Device. Edmund Winarsky, Brunswick, Germany, assignor to Richard Nauer, Brunswick, Germany. An automatic draining device, having in combination a receptacle, a plurality of separate outlet valves located symmetrically at the lower end of said receptacle, a float in said receptacle, a member fixed to said float and arranged centrally to, but independent of, said valves to engage the same loosely and open them when the float rises.

1,074,701. Closet-Seat. Samuel L. Eastburn, Sloatsburg, N. Y. In a device of the class described, a water closet seat; a pivotally supported cover therefor; two curved guides carried by said cover; and two side arms pivotally connected with said seat and adapted to swing about axes extending substantially at right angles to the axis of said cover; said arms having each a projecting lug located at the upper edge of the end thereof adjacent said cover and adapted to move in contact with the guides aforesaid.



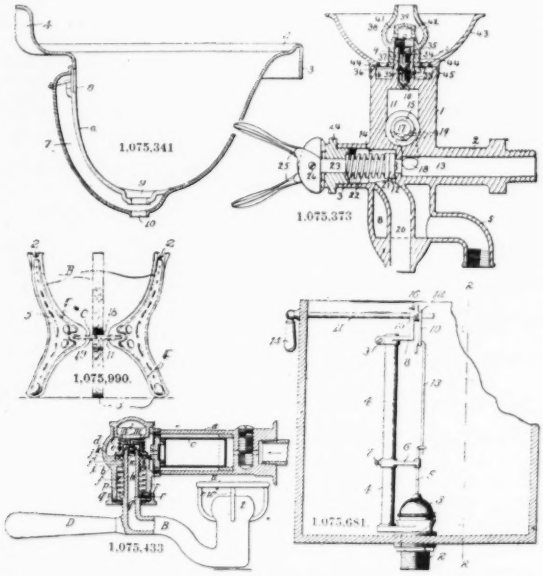
1,074,694. Heating Device for Baths and the Like. John Robert Carter, Toronto, Ontario, Canada. In a heating device for baths, the combination with a bath having hot and cold water supply pipes and a waste pipe, of a circulating pipe extending around the bath and terminating in an inlet, branch pipes connecting said circulating pipe with said hot and cold water supply pipe, and connecting said circulating pipe with said waste pipe, valves for regulating the flow and temperature of the water through the circulating pipe, and means for directing such flow into the bath or to said waste pipe.

1,075,341. Basin. William A. Dunlap, Pittsburgh, Pa. A basin, sink, etc., formed of sheet metal and provided with overflow and discharge openings, and having its wall bent to form a tubular conduit connecting said opening, the basin and conduit having all interior and exterior surfaces covered by a continuous coating of enamel.

1,075,373. Drinking-Fountain. George M. Page, Haydenville, Mass., assignor to The Haydenville Company, Haydenville, Mass., a Corporation of New Jersey. A drinking fountain comprising a casing having at the top a supply nipple and an annular waste chamber surrounding the base of said nipple, said nipple rising from the floor of said chamber, and said casing also having a sup-

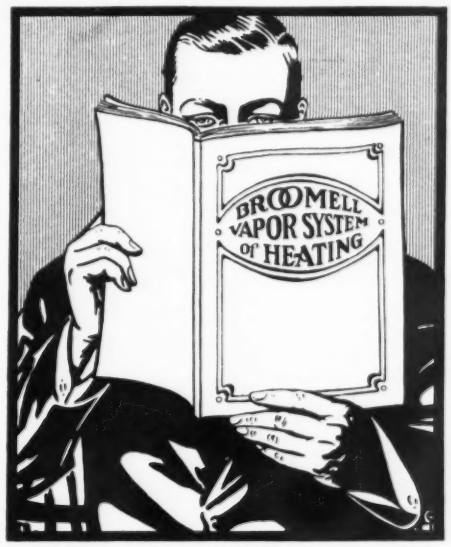
ply passageway which opens into said nipple and a waste passageway which opens into said chamber through the floor of the same, a valve for said supply passageway, a nozzle provided inside with a hood mounted on said nipple, and a waste bowl mounted on the upper end of said casing and opening into said waste chamber.

1,075,930. Boiler-Stand. Thomas O'Connell, St. Paul, Minn. A boiler stand comprising a plurality of legs each having upper and lower engaging notches in fixed position and opposed to each other, and a connector having upper and lower lugs adapted to engage said notches on said leg to fix them rigidly, said lugs being positioned to adjust said legs to one size of boiler in one position of said connector and to another size of boiler in the reversed position of said connector.



1,075,433. Sanitary Drinking-Fountain. Henry J. Milner, Chicopee, Mass., assignor by direct and mesne assignments, to Milner Manufacturing Company, a Corporation of Massachusetts. In a sanitary drinking fountain, a chambered casing having a water inlet, a pipe having a delivery nozzle at its one extremity and having its other extremity threaded and screw engaged in the casing, bodily movable on the line of the axis if its screw threaded part under the revoluble movement of such part, having its end portion protruding into the chamber in the casing, and having a water inlet opening at such protruding part, an inverted cup shaped valve inclosing the protruding extremity of the threaded pipe and seating on a wall of the casing for closing communication between the casing chamber and the water inlet in the pipe, and a member adjustable on the protruding end portion of the pipe and having a lost motion relation to the cup shaped valve.

1,075,681. Valve-Operating Apparatus for Flushing-Tanks. Frank W. Bamford, Trenton, N. J., assignor to John Maddock & Sons, a Corporation of New Jersey. The combination with a flushing tank and the usual standpipe and discharge valve in said tank, of an angle piece mounted on the upper end of said standpipe and provided with a perforation to form a journal bearing and shoulders forming stops on either side of such journal bearing, a crank connected to the valve and journaled in said bearing, and provided with a projection adapted



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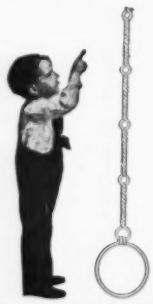

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The MURDOCK "Bubble-Font"

A Practical Out-Door Drinking Device

It's not a fancy drinking fountain that gives you more trouble than it's worth after it's installed. It's built for service of the roughest kind.

Anti-Freezing—Self-Closing —Non-Pollutable

Just the thing to stand the wear and tear of a school yard, public street, park, etc. Always "on the job," winter as well as summer because it is anti-freezing.

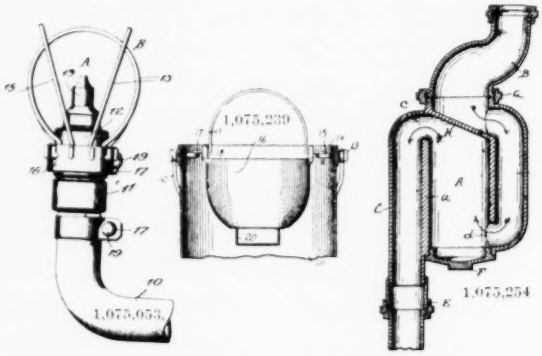
Send for our descriptive booklet giving full information

The Murdock Mfg.&Supply Co.

Cincinnati, Ohio

to engage said shoulders, and means for oscillating said crank, said means comprising a shaft extending through the walls of the tank and a depending lever on the outer end of said shaft.

1,075,053. Sanitary Drinking-Fountain. Isham S. Moore, Runge, Tex. A sanitary drinking fountain comprising a tubular member having one end reduced to form a nozzle and its other end interiorly threaded and a cage secured to said member and inclosing the nozzle end thereof, said cage comprising a plurality of U-shaped wire members having their ends extending in the same general direction and the intermediate portions of certain of said U-shaped members intersecting each other, said U-shaped members being further arranged in pairs with the members of each pair disposed in outward divergence with respect to the nozzle, whereby an uninterrupted opening is left above the nozzle, and a clamping collar mutually connecting the free ends of said members and engaged over the tubular member whereby the U-shaped wire members are disposed in inclosing relation to the nozzle.



1,075,239. Plumber's Kit. Frank Auty, New York, N. Y. The herein described kit comprising a casing having in open top, a pair of supports secured in said casing adjacent its top, a bail pivoted to said supports on the outside of the casing, said supports including a pair of eyes on the inside of the casing, a melting pot adapted to be supported within the casing and comprising a ball having outwardly extending horizontal portions terminating in ends extending downwardly through said eyes, and means on the outside of the casing to supply a portable source of heat through one wall thereof to said melting pot.

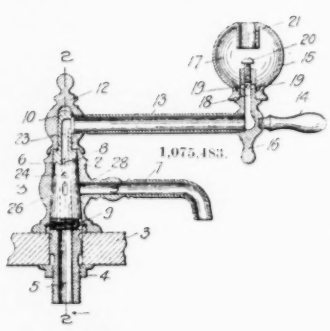
1,075,254. Liquid-Trap. Peter D. Hay, Detroit, Mich., assignor to Detroit Sanitary Supply Company, Detroit, Mich. A lavatory trap, having in combination, a deep barrel, an inclined partition across the barrel near the top dividing the barrel into an upper and lower chamber, a lead-around conduit of considerably less diameter than the barrel and cast integral with the barrel, said lead-around conduit leading from the upper chamber to the outside of the barrel there paralleling and lying contiguous to the barrel and leading into the lower chamber at the side and flush with the bottom thereof, an outlet conduit of substantially the same bore as the lead-around conduit, cast integral with the said barrel and leading from the side of the barrel at the extreme top of the lower chamber and paralleling the said barrel contiguous thereto, and a goose-neck having an inlet opening of substantially the same bore as the said conduits and enlarging to a bore coincident to the bore of the barrel, the said enlarged end of the goose neck having a swiveling coupling with the barrel at its top, whereby the

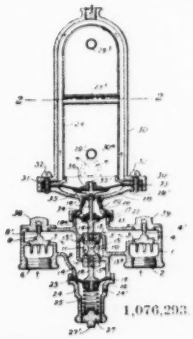
swiveling goose-neck provides a large range of adjustability for the trap and also affords an air trap to break siphonic action, substantially as described.

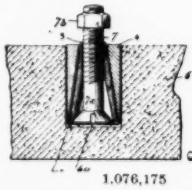
1,075,483. Faucet. Peter J. Lindgren, Denver, Colo. A faucet comprising a body having an inlet and an outlet, a valve in said body, and a bubbling cup, said valve having internally, separate passages respectively in communication with said inlet and said cup, and in its exterior surface, a pair of ports connected with one of said passages and a third port connected with the other passage, the said third port and one of said pair of ports being disposed to register with said outlet, and the said body having a by-pass for establishing communication between said third port and the other port of said pair.

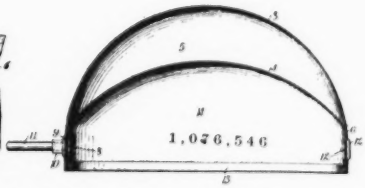
1,076,293. Equalizing Valve for Water. James J. Lawler, Pelham, N. Y. In an equalizing valve for water, a valve body having separate inlets for hot and cold water, respectively, an inner chamber communicating with the said inlets, a double acting valve controlling inlet ports in said inner chamber, a superimposed water cylinder connected to said valve body and in communication with said inner chamber, an air chamber positioned in said water cylinder open transverse tubes through said air chamber, a diaphragm closing one end of said air chamber, mechanical means for pressing said valve in an upward direction and a valve stem upon said valve having one end thereof engaging said diaphragm.

1,076,175. Expansion Bolt. Clarence B. Van Antwerp, Chicago, Ill. An expansion device comprising a one-piece cylindrical shell of ductile material, having a conical bore with its inner end inwardly flanged, a trunco-conical non-threaded plug arranged within said shell and having its inner and outer walls trunco-conical and of substantially uniform thickness throughout their length and provided with longitudinal slots extending from its inner edge for a substantial portion of the longitudinal diameter of said plug, and a bolt having a trunco-conical head, said bolt extending through said plug with the outer edges of said head engaging the inner edge of said plug and adapted to expand said plug upon the bolt being drawn inwardly relative to said plug.









1,076,546. Valve Float for Closet Tanks. Charles M. Brenner, Shreveport, La. A valve float for closet tanks, comprising a pair of hollow imperforate members each having an open end, one of said members being of less depth than the other member and disposed within the

Crawford Combination Vise

Having lead jaws, is the only vise made that will hold brass and nickel plated pipe securely without scratching or marring.

Lead jaws can easily be removed and remoulded.

Also equipped with steel jaws which will grip firmly any pipe up to 1¼ in. iron size.

Light, compact, easily carried. Can be readily secured to bench, board or door frame.

Every plumber and fitter should have this great labor-saver. No other vise or attachments needed on the job.

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That's right — there's only one generator—and that's **The Masterpiece** possessing these qualities:

Always retains 10 lbs. pressure.

After discharging reseats at not less than 9 lbs. thus losing no heat already gained.

Perfect, simple, attractive and inexpensive—in short THE MASTERPIECE. Manufactured by

THE WATSON SPECIALTY CO.
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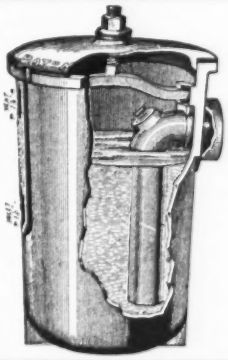
We beg to announce that
In a Boston Grease Trap

there is held fast all grease from Bostonese kitchen sinks—that the waste pipes are absolutely free and can never be grease-clogged.

The BOSTON GREASE TRAP is easy to install—very simply constructed, durable, and can be quickly and easily cleaned. Why not write us for a detailed description?



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ANTI-SYPHON AND RESEALING TRAPS

Are the best that experienced and competent workmanship can produce

FROM AN ARTISTIC
AS WELL AS
SANITARY POINT OF VIEW

Deep water seal—over 7". Full waterway. Ground joint at outlet. Artistic in design. Superior in finish. Castings smooth inside and out.

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BAD TRAPS

are as bad as bad eggs and far more costly. The cautious seldom err. CLEAN SWEEP TRAPS keep the home sanitary. They never air bind, others do. The Government uses them on its work as well as most of the plumbers in the country.

In Lead and Brass.

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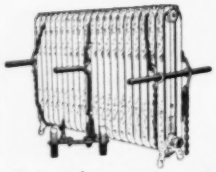

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This carrier is strong, **adjustable** and durable—saves labor, time and strength, and pays for itself on the first job.

Write for details and prices.

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No matter what the requirements of the country and suburban home, there is a

CALORIC NOISELESS ENGINE

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Because of its safety, simplicity and lack of noise, the "Caloric" is suitable for use in the home for pumping purposes.

Makes no more noise than a big clock.

The "Caloric" is in a class by itself for pumping water.

Price extremely reasonable.

You can make good money handling the "Caloric" in your locality.

Write for Catalog "C" and our agents proposition.

THE BREMEN MANUFACTURING COMPANY, Bremen, O., U.S.A.

Weighs no more than a pair of boots,

but it's tested to a load of 1000 lbs. A very low-priced adjustable boiler stand for boilers of any make, 30, 35 or 40 gals. **No bolts.** Weight, about 5 lbs. Height, 13¼ inches. The fitter will appreciate large space under boiler. Lots of 100 or more? Get jobber's prices.

C. H. FOSTER
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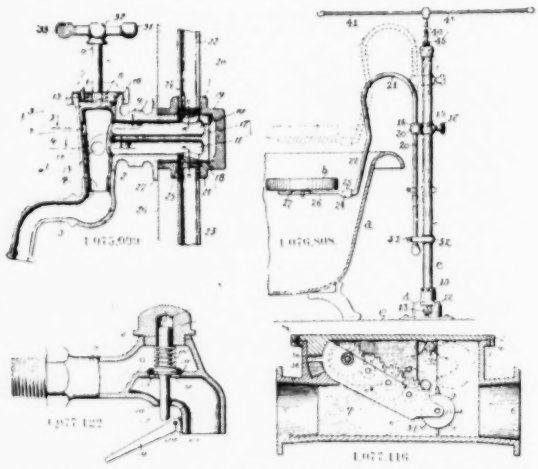
"A NEAT FLANGE"

MODERN IRON WORKS
QUINCY, ILL.

same, the sides of said members at the open end portion being in contact and the edges of said members at the open ends being fastened together by a lock seam to form between said members a permanently sealed air chamber, and to reinforce the said members at their open ends, the open end of the float being adapted to be closed by the water in the tank to form a closed water-sealed air pocket in said inner member; plates disposed respectively on the inside of the inner member and the outside of the outer member at the meeting sides of said members to reinforce the same, and a float stem connected with one of the outer plates.

1,075,999. Faucet. Louis Abramovitz, New York, N. Y. A faucet comprising two independent supply-ducts arranged in superposed relation and provided with a rotary plug-valve having three separated inlet ports one of which is adapted to communicate with one of said supply-ducts while the other is closed, and another with the other of said supply-ducts while the first mentioned supply-duct is closed, and the third valve-port being elongated with its central line of length arranged obliquely to the vertical and adapted to register with both of said supply-ducts simultaneously and to open both of them equally when the valve is turned in either direction and also to vary the uncovered area of the openings relatively to each other when turned in either direction, substantially as and for the purpose set forth.

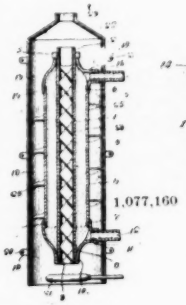
1,076,808. Bath-Room Fixture. George F. Arburg, Revere, Mass. A seat support of the character described, comprising substantially parallel arms separated to permit one of said arms to be inserted down into a bath-tub, means to connect said arms at their upper ends, a seat supported by the arm capable of being inserted into the bath-tub, an upright rod, means to secure the other of said arms to said rod to turn thereon, a hollow base into which said rod is extended, a collar fast on said rod and resting on said base to turn thereon, means within the hollow base to engage the lower end of the upright rod and secure the latter against removal from the said base while permitting the said rod to be rotated, and means to secure said base in fixed position, substantially as described.



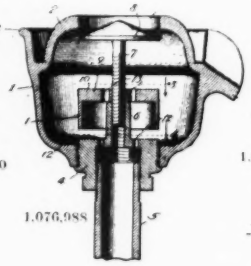
1,077,122. Faucet. Clinton J. Coffman, East Stroudsburg, Pa. A faucet comprising a body having a discharge spout, a partition formed interiorly of the body and having an opening providing a valve seat, a valve engaging said opening and having opposed stems, one of said stems being slidably engaged in the body rearwardly of the spout and projected without the same, a removable

cap mounted on the body above the opening and slidably engaged by the other stem, a coiled expansion spring acting upon the valve to normally sustain the same seated, a bearing formed on the spout at the rear thereof, a lever pivotally mounted in the bearing and arranged in the path of movement of the stem projected without the body, and a lip formed on the lever and engageable with the spout to normally hold the said lever at a rearward inclination and projected below the mouth of the said spout.

1,077,116. Water Meter. George B. Bassett, Buffalo, N. Y. In a water meter, the combination with an inlet and an outlet in axial alinement and a straight current way connecting said inlet and said outlet, a measuring wheel and means to automatically expand and contract the area of said current way mounted together in said current way, a register and means operated by said wheel which registers the speed of said wheel, of a second register and means operated by said wheel and said first mentioned means so as to automatically adapt the speed of said second register to register the full flow of the water due to both the variable area of said current way and the variable speed of water through said current way.



1,077,160



1,076,988

1,077,221

1,077,160. Water Heater. Frederick W. Reese, East Palestine, O. A water heater,. comprising an inner pipe having both ends threaded, an outer pipe shorter in length and arranged co-axial therewith but spaced therefrom to leave an intervening annular water space, a bowl-shaped fitting connecting the lower ends of the pipes and provided with a water inlet, an inverted bowl-shaped fitting connecting the upper ends of said pipes and provided with an outlet, the said pipes and fittings forming a water jacket, a drum surrounding the water jacket and having an internal diameter greater than the external diameter of said bowl-shaped fittings, a spiral web encircling the outside of the jacket and interposed between said jacket and the inner wall of the drum, the said spiral web being attached to the drum and serving to centrally position the water jacket, and a spiral web contained within and supported by the inner pipe.

1,076,988. Drinking Fountain. Patrick J. Madigan, Chicago, Ill. The combination in a drinking fountain of a hollow casing having therein an upwardly directed intake opening, a central support extending upwardly from the bottom of said casing, the upper walls of the latter being drawn inwardly to a discharge opening at the top.

1,077,221. Water Closet. Joseph P. Cowan, Pittsburgh, Pa. The combination of a closet bowl provided with bolt receiving openings, a seat, a hinge having one of the members thereof connected to the seat, and the opposite member adapted to be connected to the bowl, bolts engaging the said opposite hinge member and passing through the bolt receiving openings of the bowl, and means within each bolt opening for positioning the bolt therein, said means being adapted by rotative adjustment to change the position of the bolt with respect to said opening.

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No. 82 Kerosene Torch
Price Each $4.00 Net

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Your nearest jobber will supply at factory price or we will ship direct when cash accompanies the order. Send for Catalog—it's free.

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Detroit Valve and Fittings Co.

Manufacturers of

Malleable Iron Fittings and Special Malleable and Grey Iron Castings. Galvanizing and Japanning.

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No. 63 Trap

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Makes Hot Water Heat cost less to install than Hot Air or Steam Heating. Saves Time, Labor, Fuel and Material.

Does away with old-fashioned large mains and risers. No mains larger than 2-in. Risers 1-2 in. and 3-4 in. are sufficient.

No Hot Water Heating Plant complete without a

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HORIGAN SUPPLY CO.,
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WANTED—SALESMAN CALLING ON the plumbing and heating trade in natural gas territory to handle a well advertised line of gas burning heating boilers. Address Box 983, care of "Domestic Engineering," Chicago. 9-13

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FOR RENT—OFFICE SPACE OR DESK room. Prefer plumbing specialty man calling on architects. J. R. Williams, 101 Park Avenue, Architects Building, New York City. 11-15, 22, 29

Government Proposals.

TREASURY DEPARTMENT, SUPERvising Architect's office. Washington, D. C., October 30, 1913. Sealed proposals will be received at this office until 3 p. m., November 28, 1913, and then opened, for a new toilet room, etc., in the U. S. Post Office, Kalamazoo, Mich., in accordance with specification and drawing, copies of which may be had at this office or from custodian of the building, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-1, 8, 15

TREASURY DEPARTMENT, SUPERVISing Architect's Office, Washington, D. C., November 3, 1913—Sealed proposals will be received at this office until 3 p. m., December 1, 1913, and then opened, for a cooled drinking water system, etc., in the U. S. Post Office, Oklahoma City, Okla., in accordance with the drawing and specification, copies of which may be obtained from the custodian at the building or at this office, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-15, 22, 29

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., November 3, 1913—Sealed proposals will be received at this office until 3 p. m., December 1, 1913, and then opened, for a pumping plant, etc., in the U. S. Post Office, Oklahoma City, Okla., in accordance with the specification and drawing, copies of which may be obtained from the custodian of the building or at this office, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-15, 22, 29

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., November 3, 1913—Sealed proposals will be received in this office until 3 p. m., December 1, 1913, and then opened, for changes in plumbing, conduit and wiring system, and lighting fixtures at the United States customhouse and Post Office, Dubuque, Iowa, in accordance with drawings and specification, copies of which may be had at this office or at the office of the custodian, Dubuque, Iowa, in the discretion of the Supervising Architect. O. Wenderoth, Supervising Architect. 11-15, 22

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Conforms with codes of nearly every city and state in the U. S. A. Recommended by master plumbers as a TIME SAVER.

Note sectional view showing thread which grasps calking and prevents expansion or contraction. Note also adjustment feature. Get a good bend at a surprisingly low price. Write for sample.

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